a-dec®

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SERVICE GUIDE

FOR

A-DEC DENTAL CHAIRS

MODELS
1010/15/20

October 1993

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SECTION 1

INTRODUCTION

This manual contains service related information for A-dec Model 1010, 1015 and 1020 dental chairs. Before using this manual, you should become familiar with its contents, especially Section 3: *Trouble-shooting*. Being familiar with the content of the manual will reduce your time in the doctor's office, your time in research, and the frustration of trying to find information.

Overview

This manual is divided into the following four sections:

Section 1 - Introduction

Describes manual contents and how to determine what information in this manual is applicable to the dental chair you are working on.

Section 2 - Service Information

Section 2 provides a functional description of how the chair works. This section also contains chair electrical and hydraulic systems diagrams and schematics.

Section 3 - Troubleshooting

When there is something wrong, don't panic. Just use the troubleshooting procedures in Section 3. Section 3 describes the symptoms of various problems, then either tells you how to fix the problem or directs you to an appropriate procedure.

Section 4 - Illustrated Parts Breakdown

Section 4 contains the exploded parts drawings for Models 1010/15/20 Dental Chair major assemblies and includes parts lists. The parts lists specify A-dec part number, description and service parts codes. Use the information in Section 4 when ordering replacement parts.

Year and Model Variations

When necessary we will distinguish between variations of a chair model by serial number or by the month and year manufactured. The month and year manufactured information is included in the serial number of each A-dec Dental Chair. The month of manufacture is indicated by a code character *(see Table 1-1)*. The year is indicated by the digit following the month code *(see Figure 1-1)*.

The serial number tag can be found in one of two places: 1) on the top surface of a chair's upper structure (raise the toeboard for access). 2) on the underside of the right-hand armrest support.

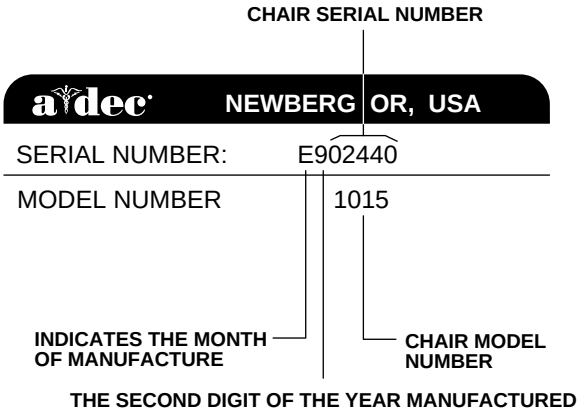


Figure 1-1 Serial Number Tag

Table 1-1 Month of Manufacture Codes

CODE	MONTH OF MANUFACTURE
A	January
B	February
C	March
D	April
E	May
F	June
G	July
H	August
I	September
J	October
K	November
L	December

SECTION 2

SERVICE INFORMATION

WARNING

THE CHAIR CONTROLLER AND SOLENOIDS USE PRIMARY INPUT AC VOLTAGES (100, 120, OR 240V AC) FOR OPERATION. TO AVOID PERSONAL INJURY, FOLLOW ALL SAFETY PRECAUTIONS WHEN WORKING ON THE CHAIR.

Introduction

A-dec Model 1010, 1015 and 1020 chairs are electronically controlled, hydraulically powered dental chairs. Switches on the Multi-Function Footswitch are used to position the chair and program Auto-Positioning functions into the chair. The hydraulic system is controlled by the electronic control module using relays and solenoid-actuated valves. The parts of the 1010/15/20 chairs are shown in Figure 2-1.

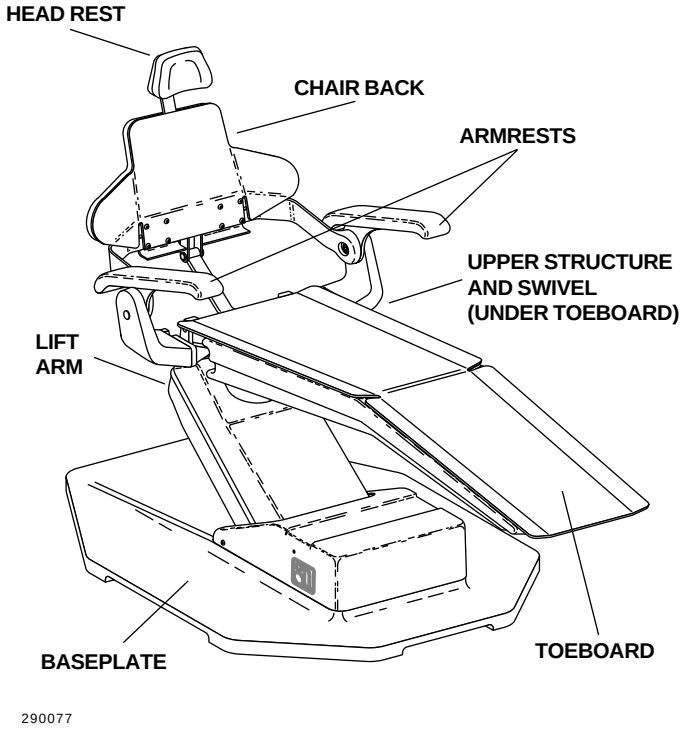


Figure 2-1. Dental Chair Assemblies

Systems Description

Refer to Figure 2-2 below and Figure 2-3 on page 2-3 while reading the following descriptions.

Hydraulics

The hydraulic system consists of:

- **A** An hydraulic fluid reservoir. The fluid level in the reservoir can be seen through the sides of the reservoir and is serviced via a top fill cap.
- **B** Hydraulic cylinders for base lift and back tilt functions. Pressurized hydraulic fluid extends the cylinder rod during base and back up functions. Springs and gravity retract the rod during base and back down functions.
- **C** A motor-driven hydraulic pump (and starter capacitor) that supplies hydraulic fluid from the reservoir, under pressure, to the chair lift and tilt hydraulic cylinders for Back Up and Base Up functions.
- **D** A solenoid/manifold assembly to gate hydraulic fluid to and from the two cylinders. Depending on the chair function called for, the controller selects which solenoid-actuated manifold valves are opened or closed. The solenoid/manifold assembly also includes four adjustable needle valves used to restrict or divert the flow of hydraulic fluid to and from the lift and tilt cylinders. These valves provide the rate of travel adjustment for chair base and back movement.

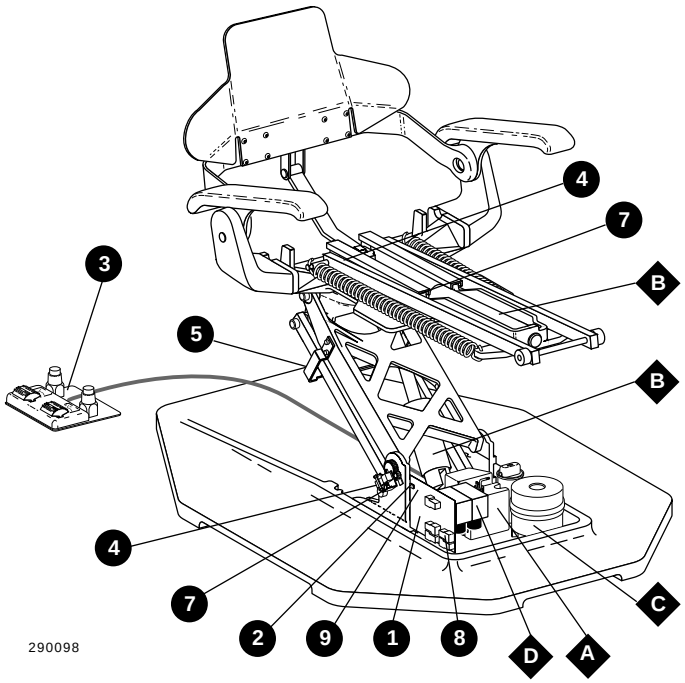
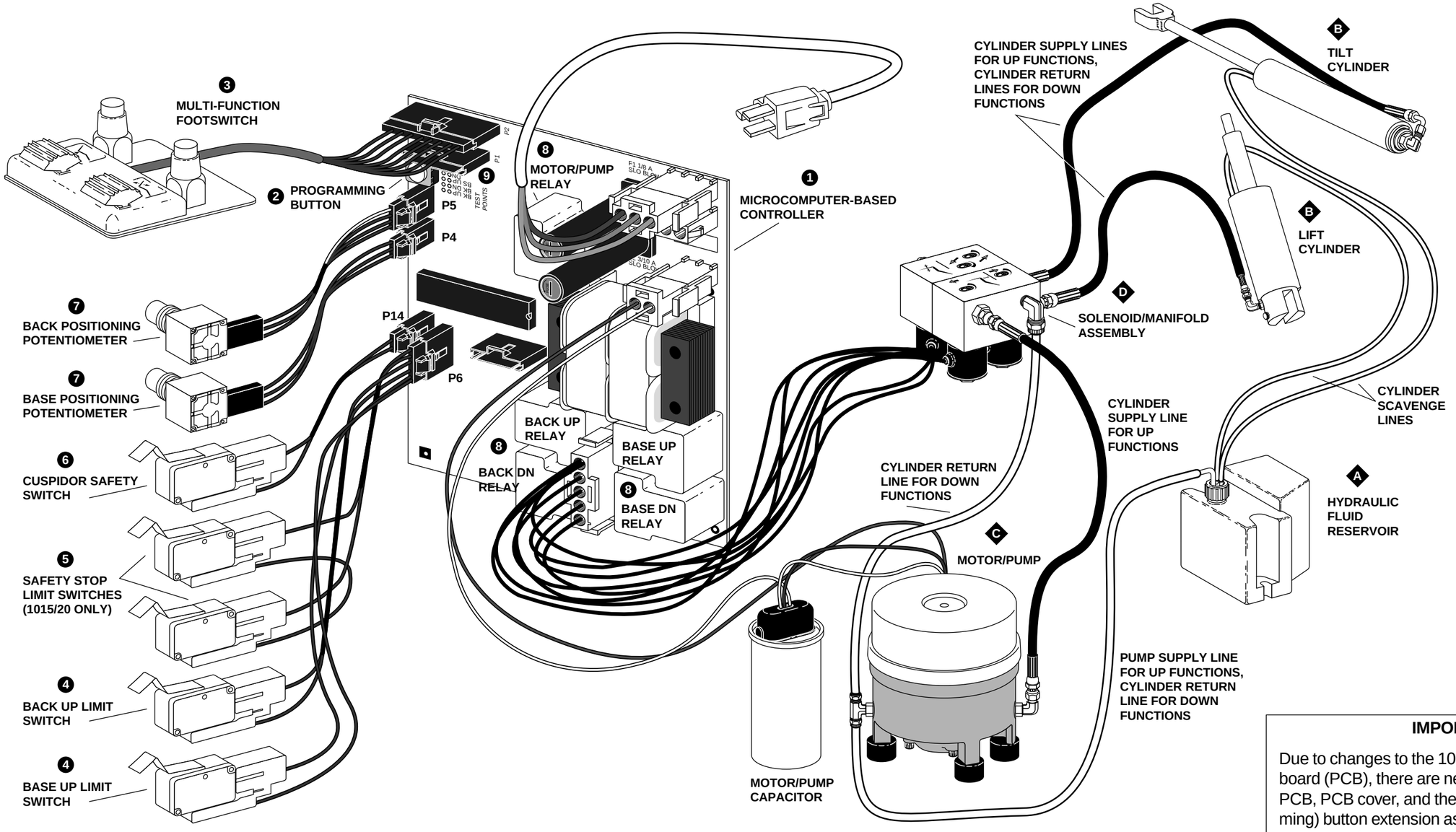


Figure 2-2. Electronic and Hydraulic Systems

Electronic Control

The electronic control system consists of:

1. A microcomputer-based controller that: A) scans the footswitch for a closed switch, B) senses the current position of the chair, C) senses the status of the chair limit switches, D) stores programmed auto-positioning data, and E) controls the electro-hydraulic system.
2. A programming button that, when pressed, causes the controller to save the current chair position values for Pre-Position or Auto-Return functions.
3. A multi-function footswitch used to position the chair. When programming the chair, the footswitch is used to indicate which function (Pre-Position or Auto-Return) is being programmed.
4. Chair base and back limit switches to detect when the maximum allowed up travel is reached. The controller will stop chair base or back up movement if the limit switch is actuated.
5. On chair Models 1015 and 1020 only, two safety stop switches to stop chair movement if any object is caught between the underside of the lift arm and the baseplate *(see Figure 2-1 on page 2-1)*. All chair functions with the exception of Base Up are disabled when a safety stop limit switch is actuated.
6. One safety stop switch to stop chair movement if any object is caught under a chair-mounted cuspidor (not shown). All chair functions with the exception of Base Up are disabled when a safety stop limit switch is actuated.
7. Two potentiometers that provide the controller with current position values for the chair base and back. The controller saves position values when being programmed and compares that value with current position value for Pre-Position or Auto-Return functions.
8. Five electro-magnetic relays used by the controller to turn the hydraulic pump on or off and to select solenoid actuated manifold valves to open or close.
9. A set of test points which allow you to position the chair without using the multi-function footswitch. Refer to **Section 3, Troubleshooting,** page 3-17 for more information.



IMPORTANT

Due to changes to the 1010/15/20 printed circuit board (PCB), there are new part numbers for the PCB, PCB cover, and the PCB store (programming) button extension assembly. A new PCB has one or two fuse holders mounted vertically on the board, the older PCB has a single fuse holder mounted flat on the board. Newer parts are not interchangeable with the older parts. The PCB part number is located in the lower left corner of the circuit board. Refer to **Appendix B - Service Notes,** page B-2 for additional information.

Figure 2-3. Electronic and Hydraulic Systems

Functional Description

The following paragraphs describe how Model 1010/15/20 chairs function. For testing or adjustment procedures, refer to Page 4-1.

Power Supply

AC voltage (100, 120, or 240V) is applied to the controller printed circuit board (PCB). A +5V DC and unregulated 24V is produced on the PCB. The 5V is applied to the positioning potentiometers and limit switches. The 24V DC is applied to the relays and relay driver circuits on the PCB *(see Figure 2-4)*.

AC voltage is also applied, via relays, to the manifold assembly solenoids and to the motor/pump assembly. When a relay is closed by the controller, the AC circuit is completed. The power supply has no adjustments. For testing procedures, refer to Page 3-18.

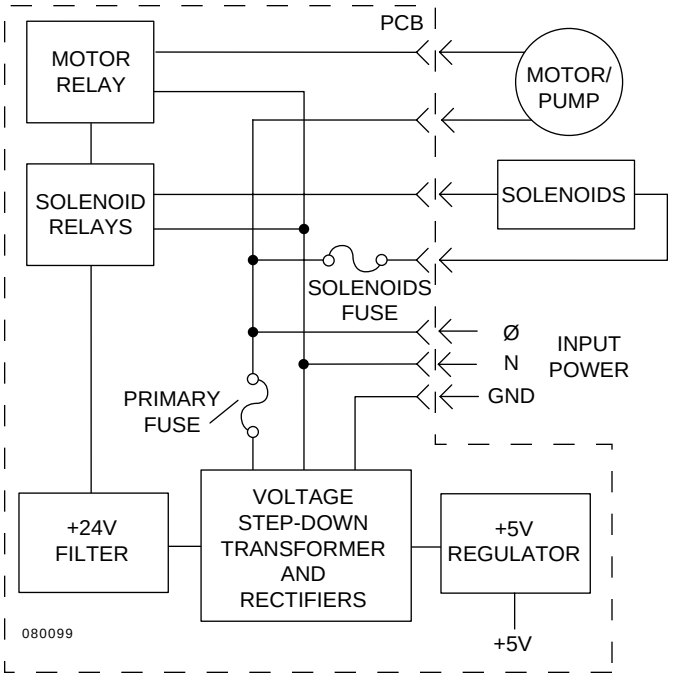


Figure 2-4. Power Supply

Footswitches

The controller constantly checks the footswitch for a closed switch. A closed switch causes the controller to perform that switch function.

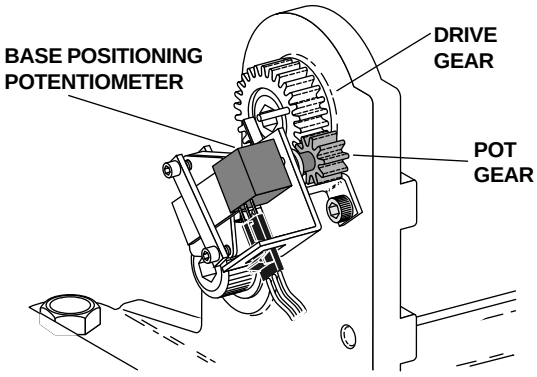
The dental chair test points are checked at the same time as the footswitch, a shorted pair of test points will have the same effect as a switch being closed in the footswitch. The footswitch has no adjustments. For testing procedures, refer to Page 3-1.

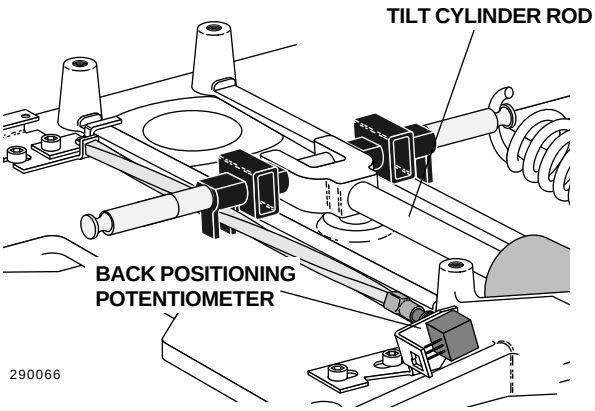
Back and Base Positioning Potentiometers

The back and base positioning potentiometers (pots) perform two tasks for the controller:

1. Provide the controller with a voltage level representing the current position of the chair base and back. The voltage level is stored by the controller for later reference during auto-positioning.
2. Tell the controller where the chair base and back are currently positioned. The controller compares the current voltage level to the voltage level stored during auto-positioning programming.

The base positioning pot is gear driven by movement of the chair lift arm. The back positioning pot is driven by movement of the chair back *(see Figure 2-5)*. For testing, or adjustment procedures, refer to Page 3-1.





NOTE: SIMPLIFIED FOR CLARITY.

Figure 2-5. Positioning Potentiometers

Safety Stop Switches (Models 1015 and 1020 only)

A chair safety stop switch will be actuated by any object being caught between the bottom cover of the chair lift arm and the chair baseplate. The two series connected switches *(see Figure 2-6)* are normally closed to enable the base and back down relay circuits. If a safety stop switch is actuated (opened), three things will happen:

1. The base and back down function relays are disabled causing the down function solenoids to shut off the flow of hydraulic fluid to the cylinders.
2. The controller, sensing that the down relays have been disabled, turns off the hydraulic pump.
3. All chair functions with the exception of base up are disabled by the controller.

The safety stop limit switch mechanism has no adjustments. For testing procedures, refer to Page 3-18.

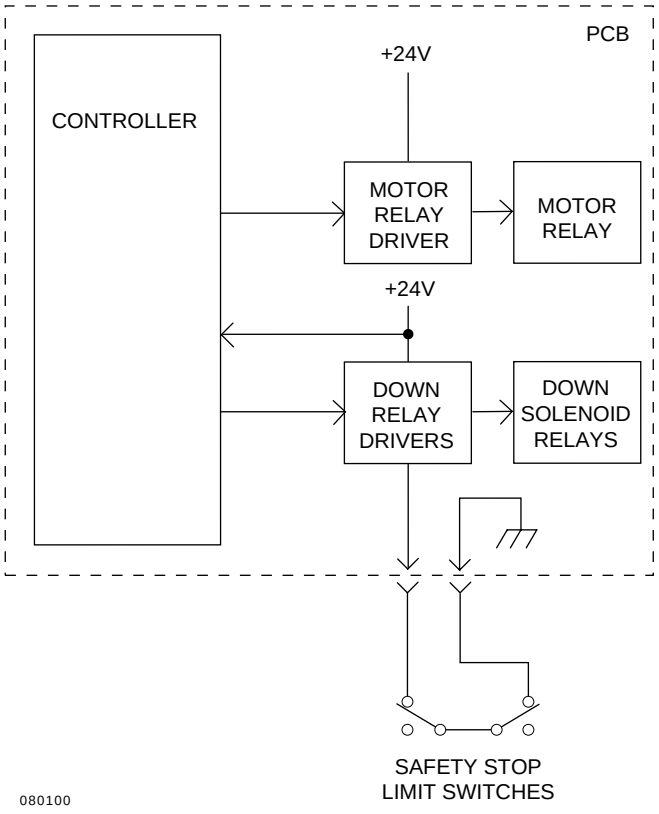


Figure 2-6. Safety Stop Limit Switches

Back Up and Base Up Limit Switches

The chair base and back up limit switches detect when the maximum allowed up travel is reached. The two limit switches are normally closed enabling the base and back up relay circuits *(see Figure 2-7)*. If an up limit switch is actuated (opened), two things happen:

1. The base or back up function relay is disabled causing the up function solenoid to shut off the flow of hydraulic fluid to the cylinder.
2. The controller, sensing that a back up or base up relay has been disabled, turns off the hydraulic pump.

For testing, replacement, or adjustment procedures, refer to Page 3-1.

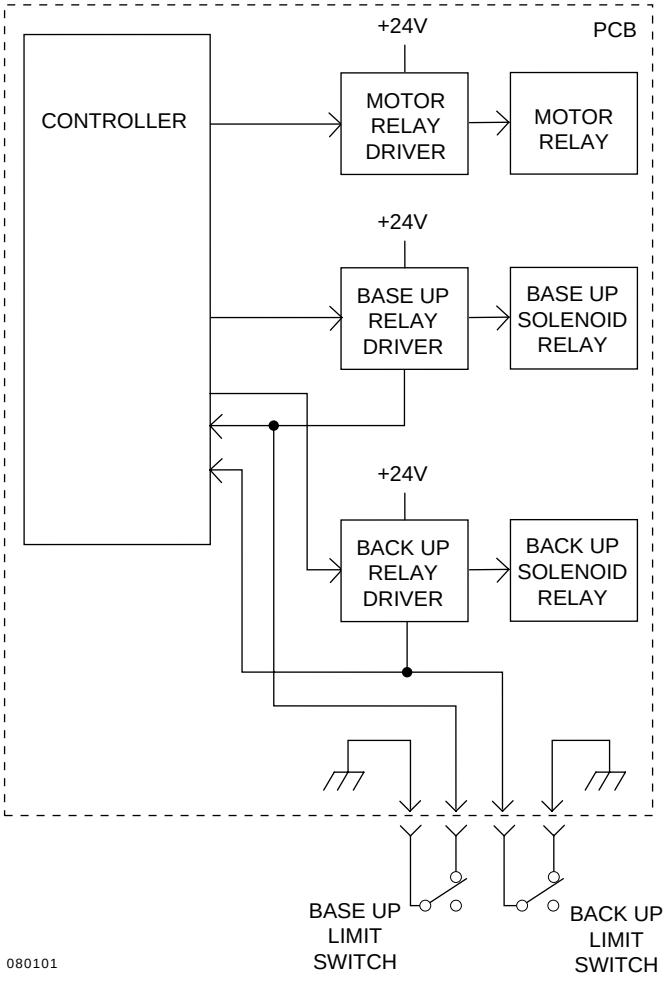


Figure 2-7. Base and Back Up Limit Switches

The base up limit switch is actuated by a pin located on the positioning potentiometer drive gear *(see Figure 2-8)*. The back up limit switch is actuated by a glide block which is part of the back tilt mechanism *(see Figure 2-9)*.

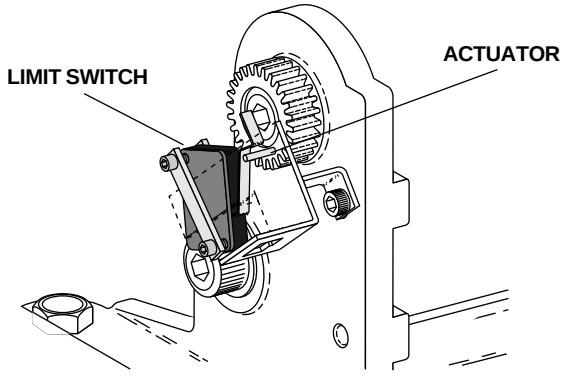


Figure 2-8. Base Up Limit Switch

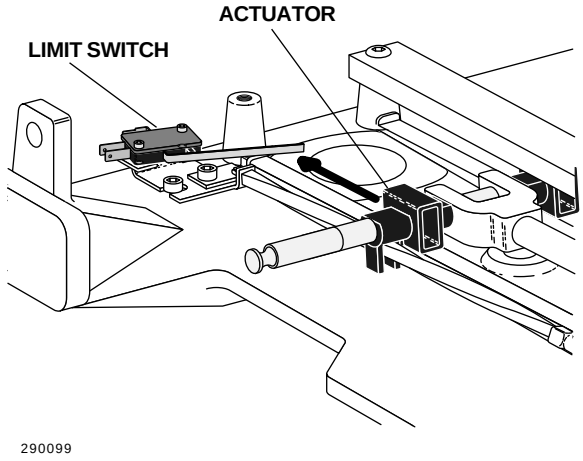


Figure 2-9. Back Up Limit Switch

Hydraulic System

WARNING

Do not service any hydraulic connections until you have depressurized the hydraulic system (see page 3-24). Do not attempt to remove a cylinder until you have read the instructions included with each new cylinder. You may be seriously injured if you fail to follow all safety precautions and instructions.

For up functions, hydraulic fluid is drawn from the reservoir by the motor/pump and delivered, under pressure, to the manifold/solenoid assembly. In the manifold assembly, fluid travels past an opened solenoid operated valve and out to the cylinder, extending the cylinder rod. For down functions, a solenoid operated valve is opened, allowing fluid from the cylinders to flow back through the manifold assembly and to the reservoir.

The motor/pump unit consists of a hydraulic pump and electric motor. The pump is driven by the electric motor. Internal thermal overload protection is included in the electric motor.

Once the chair lift and tilt cylinders have been pressurized, hydraulic pressure must be maintained in the cylinders to hold the chair in position. To prevent fluid draining back to the reservoir and allowing the chair to settle or drift, each of the high pressure output ports to the cylinders includes a check valve *(see Figure 2-10)*. The high pressure output ports are in the hydraulic blocks.

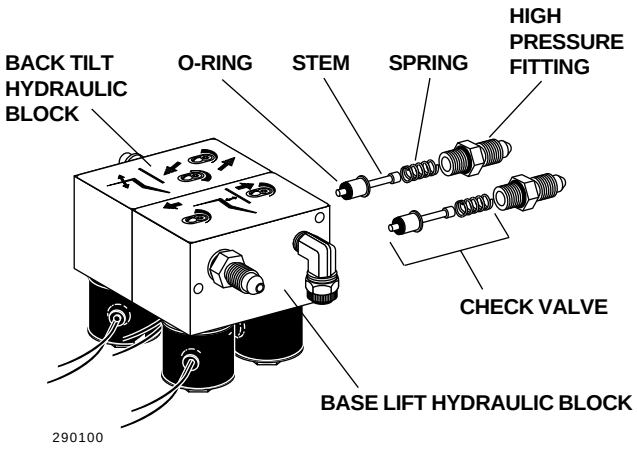


Figure 2-10. High Pressure Port Check Valves

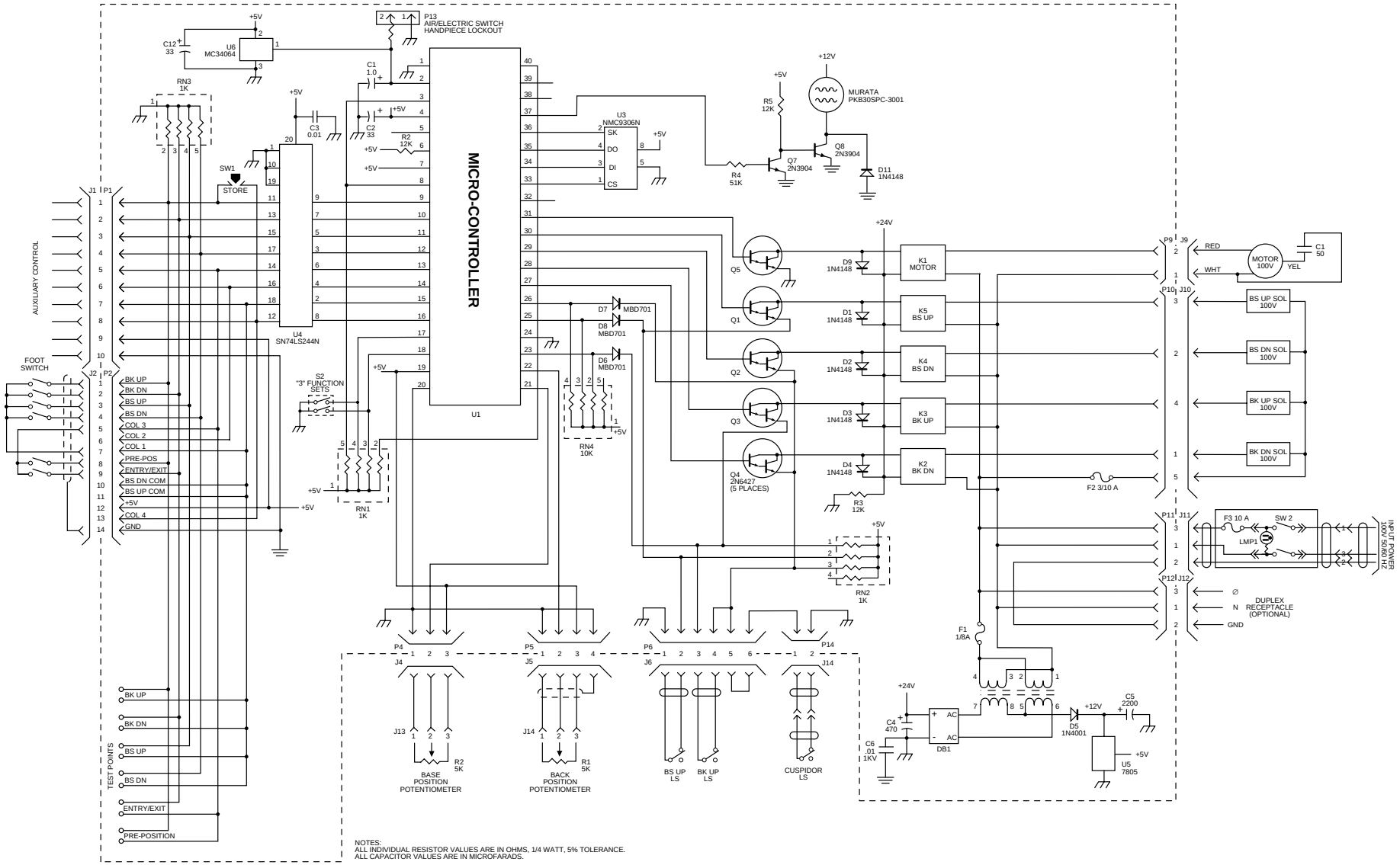


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Figure 2-11. Model 1010 Dental Chair Electrical Schematic, 100V, PCB P/N 61-1373-01

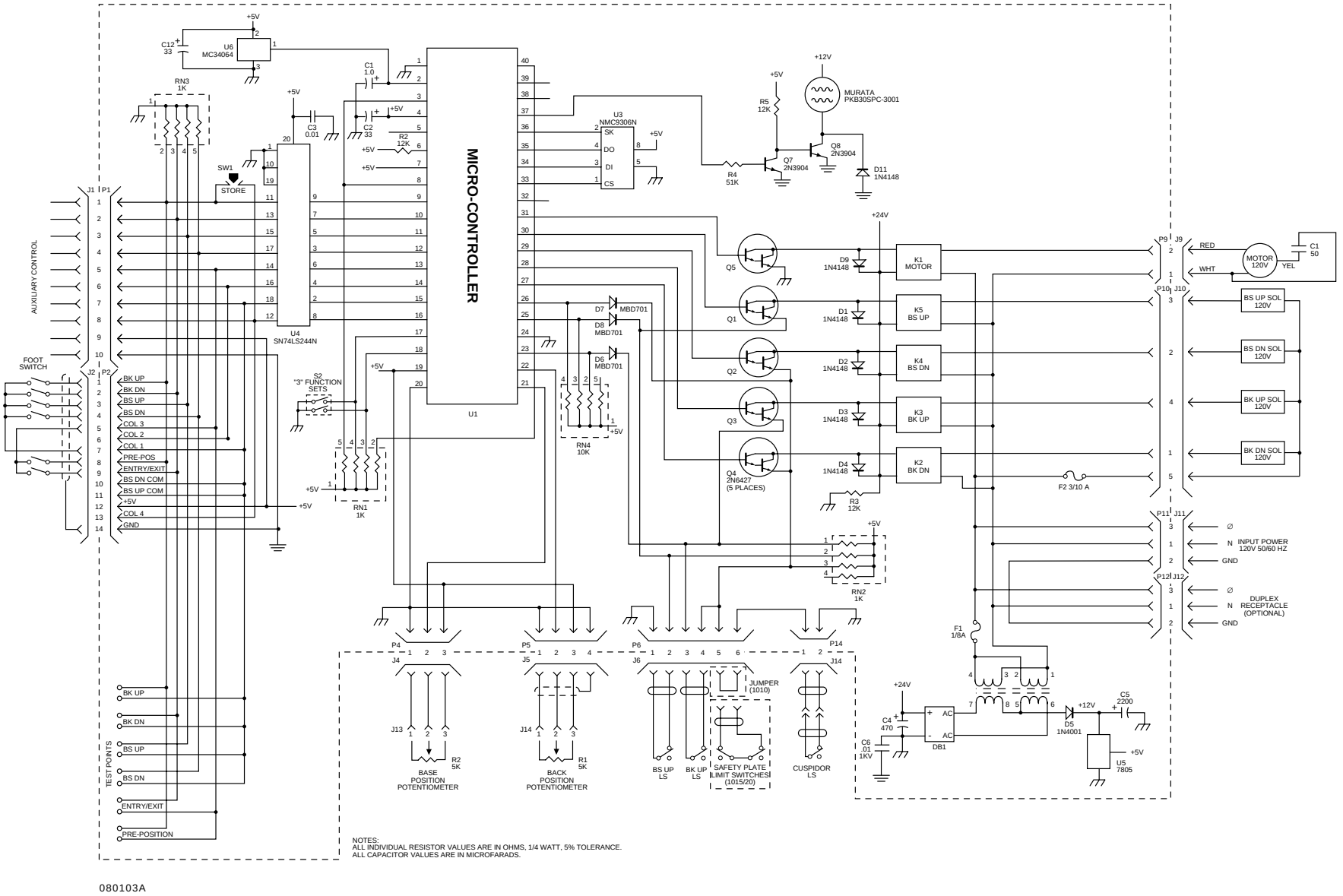

Figure 2-12. Model 1010/15/20 Dental Chair Electrical Schematic, 120V, PCB P/N 61-1214-01 S/N H258626 and Higher

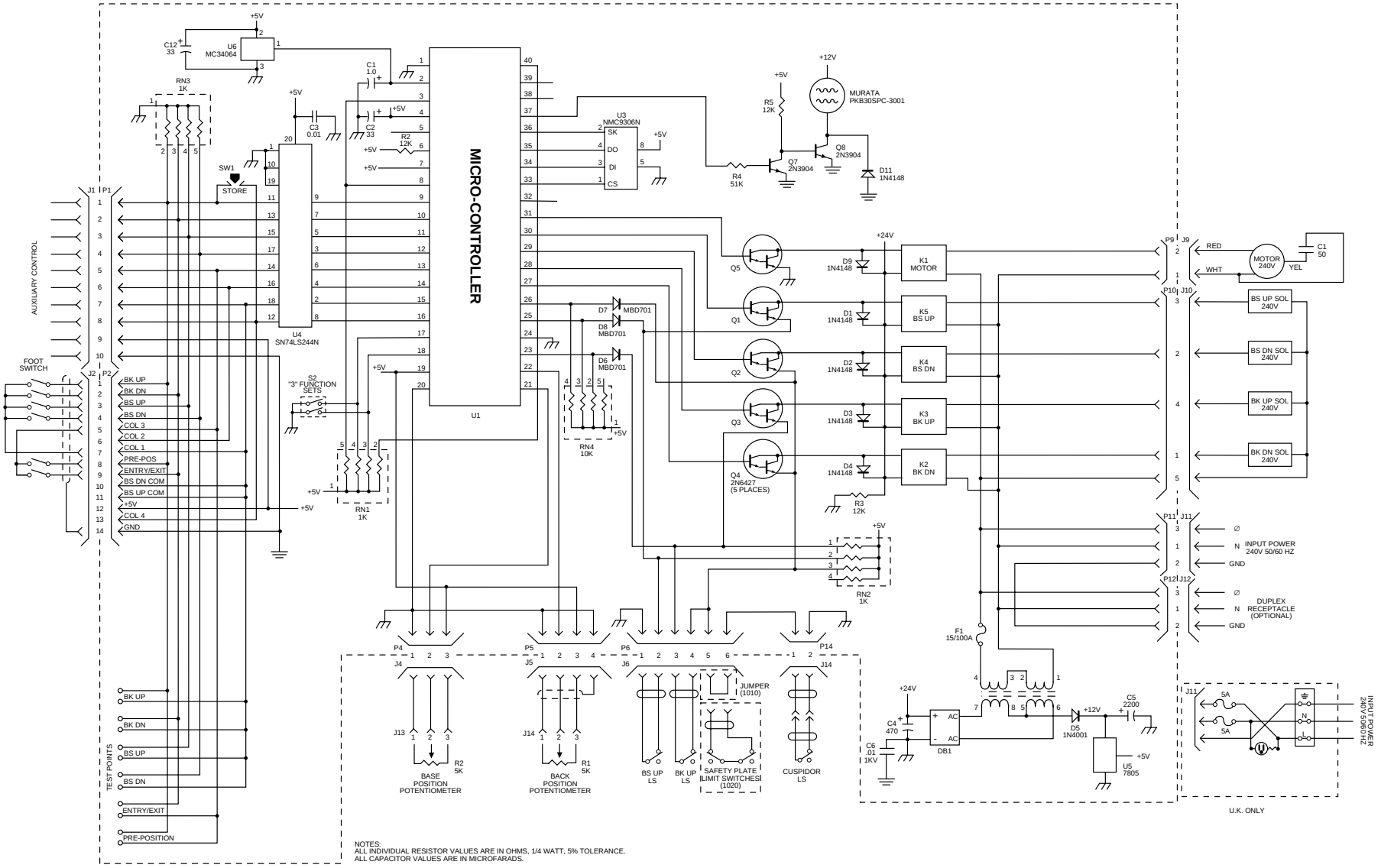

Figure 2-13. Model 1010/20 Dental Chair Electrical Schematic, 240V, PCB P/N 61-1217-01 S/N H258114 and Higher

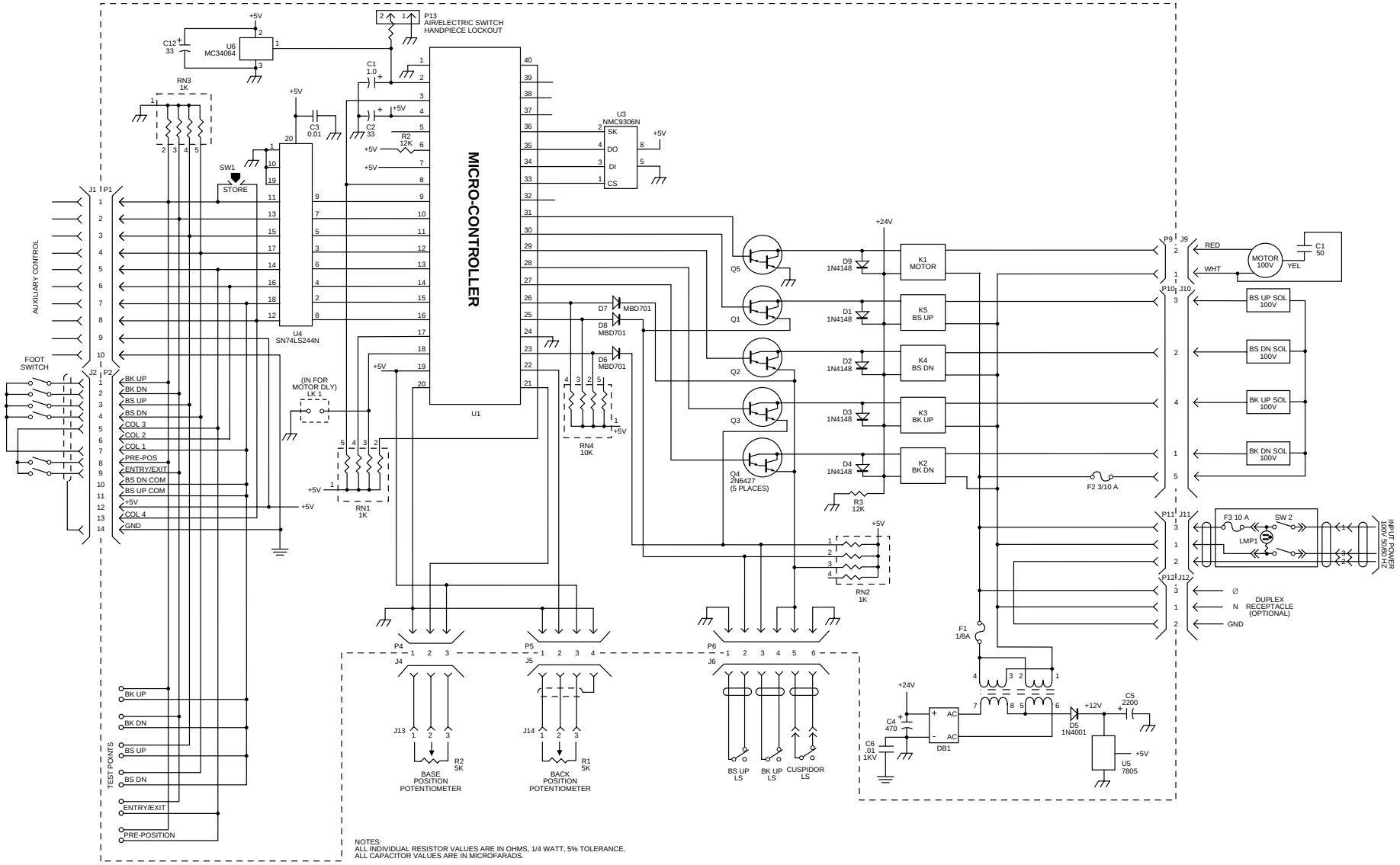

Figure 2-14. Model 1010 Dental Chair Electrical Schematic, 100V, PCB P/N 61-1373-01

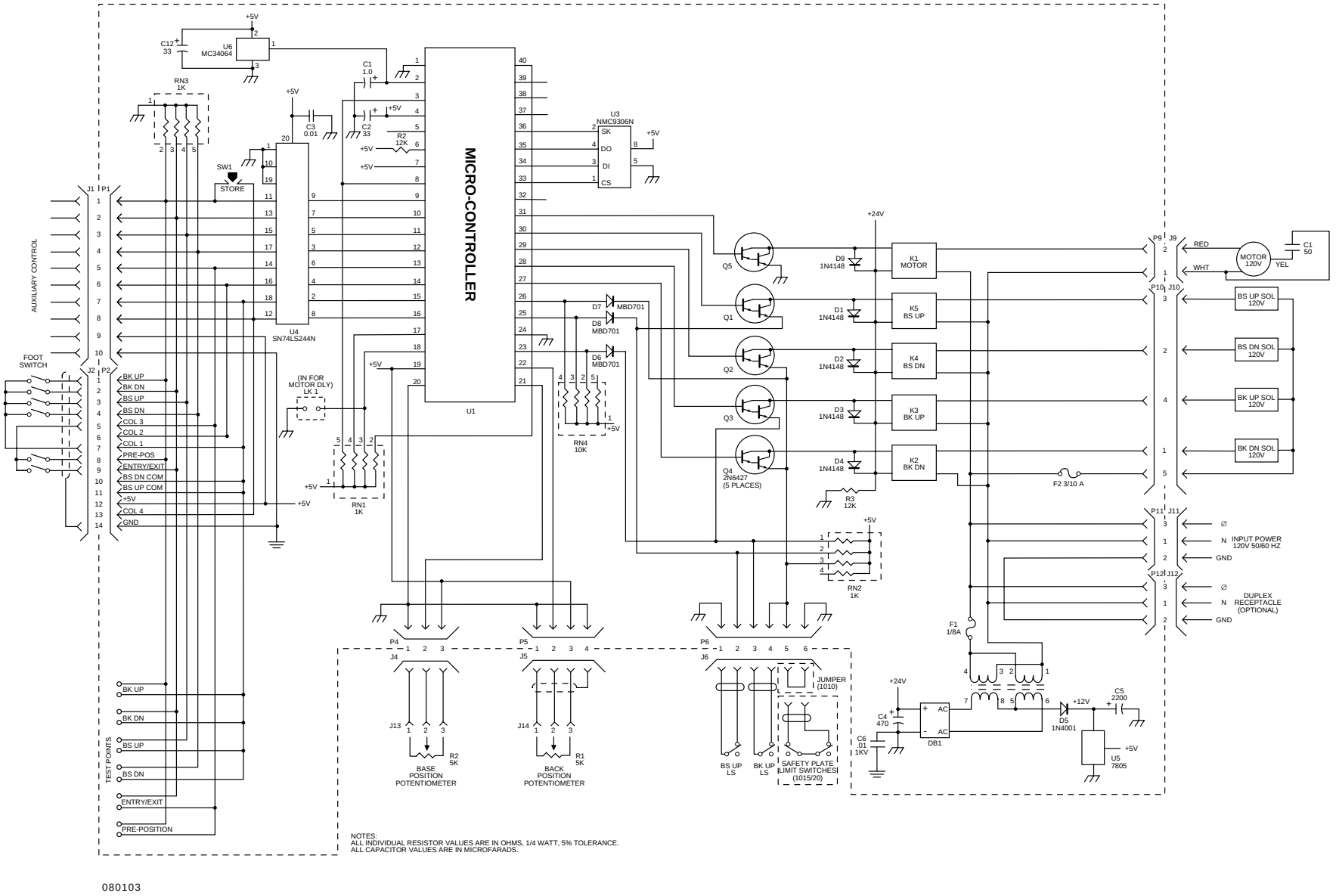

Figure 2-15. Model 1010/15/20 Dental Chair Electrical Schematic, 120V, PCB P/N 61-1214-01

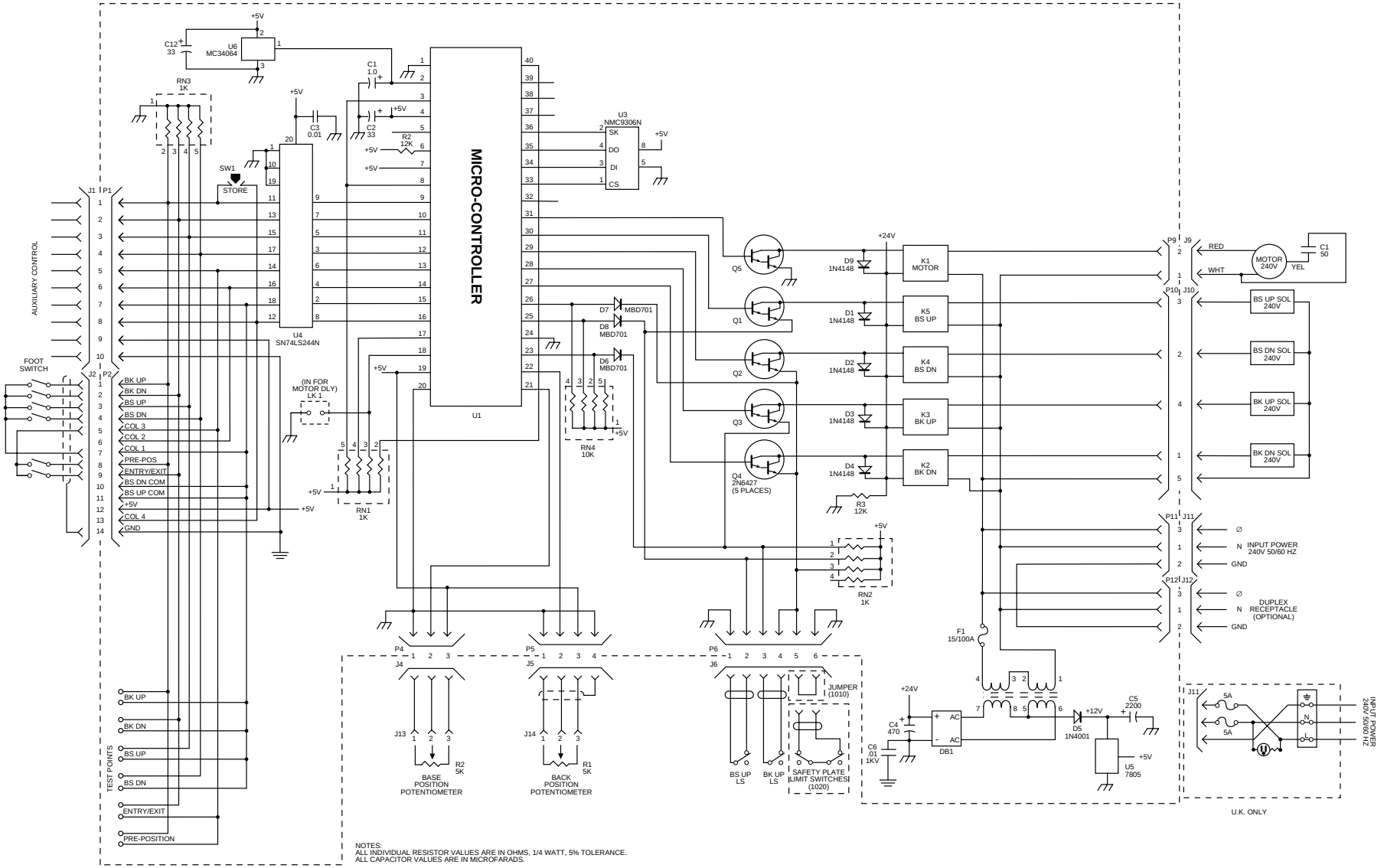

Figure 2-16. Model 1010/20 Dental Chair Electrical Schematic, 240V, PCB P/N 61-1217-01

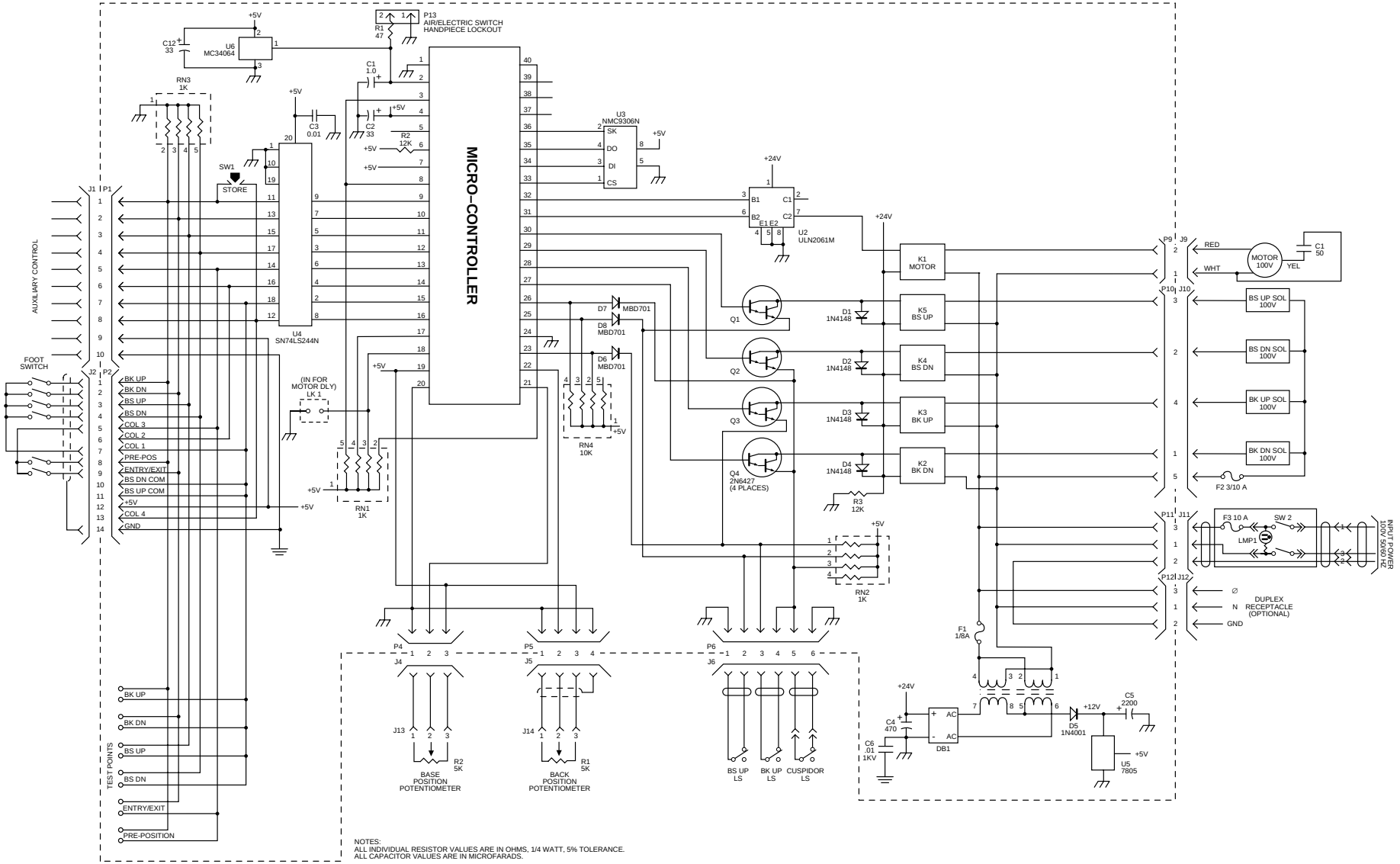

Figure 2-17. Model 1010 Dental Chair Electrical Schematic, 100V, PCB P/N 61-1373-00

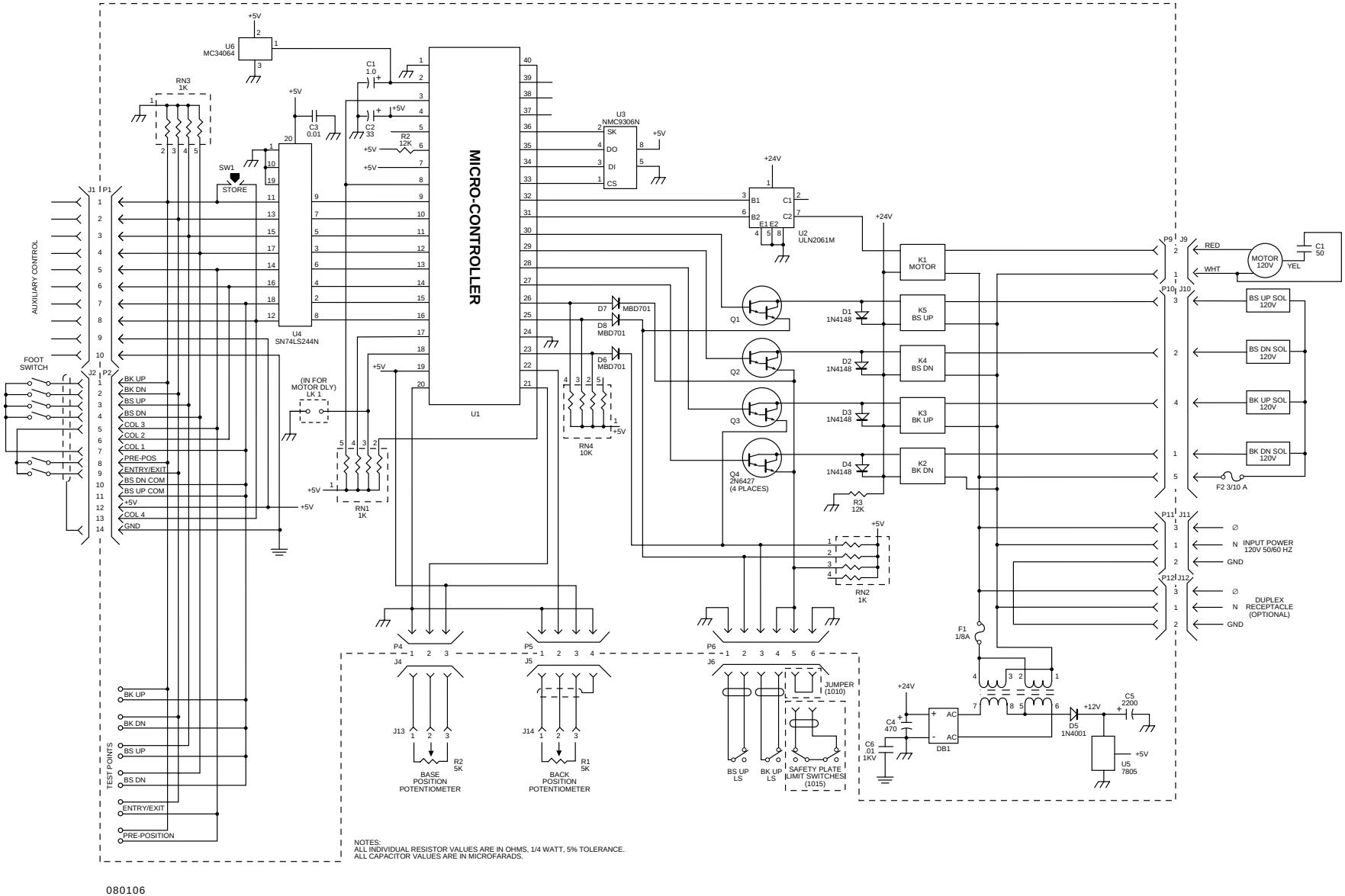

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Figure 2-18. Model 1010/15 Dental Chair Electrical Schematic, 120V, PCB P/N 61-1214-00

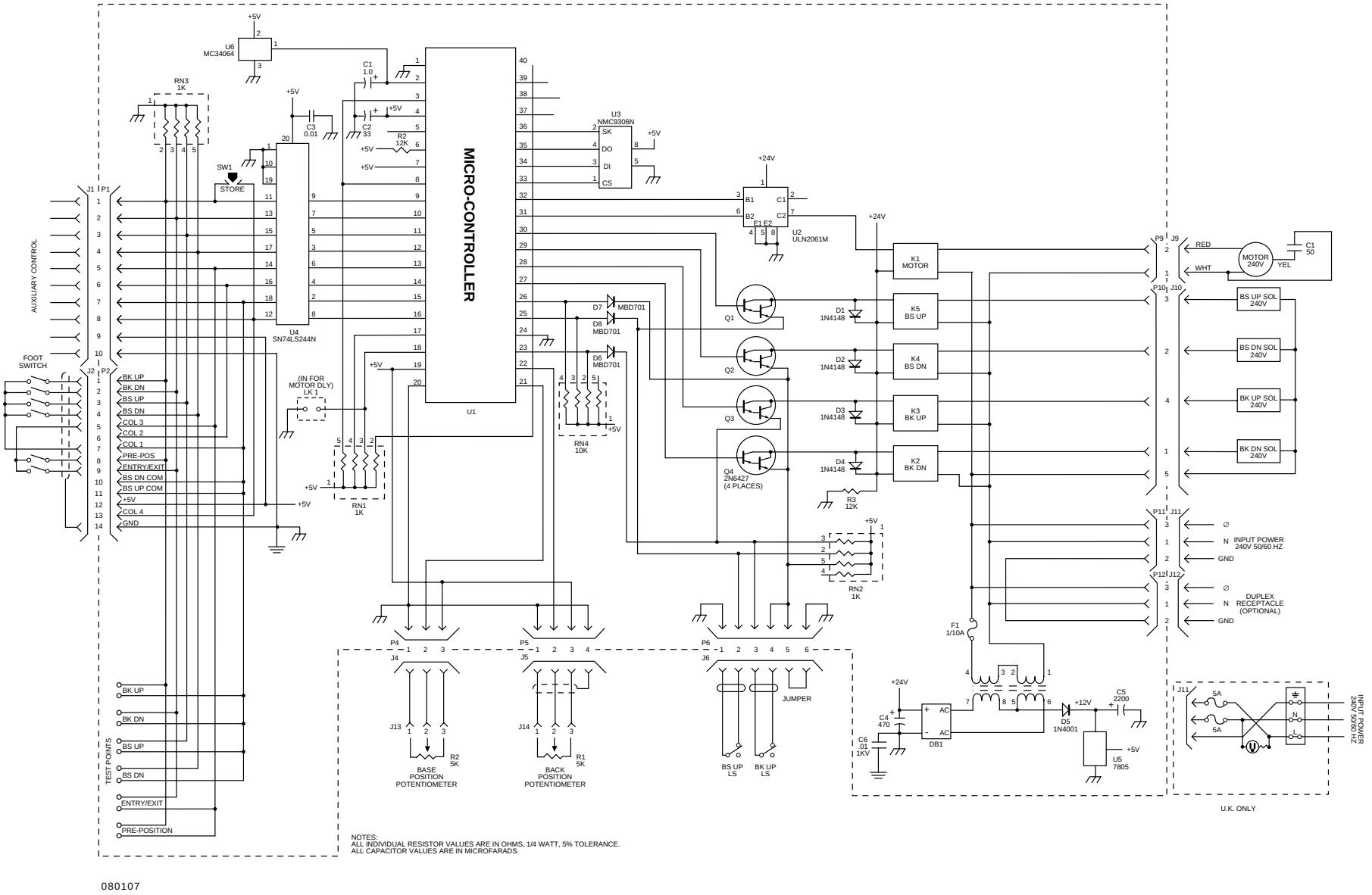

Figure 2-19. Model 1010 Dental Chair Electrical Schematic, 240V, PCB P/N 61-1217-00

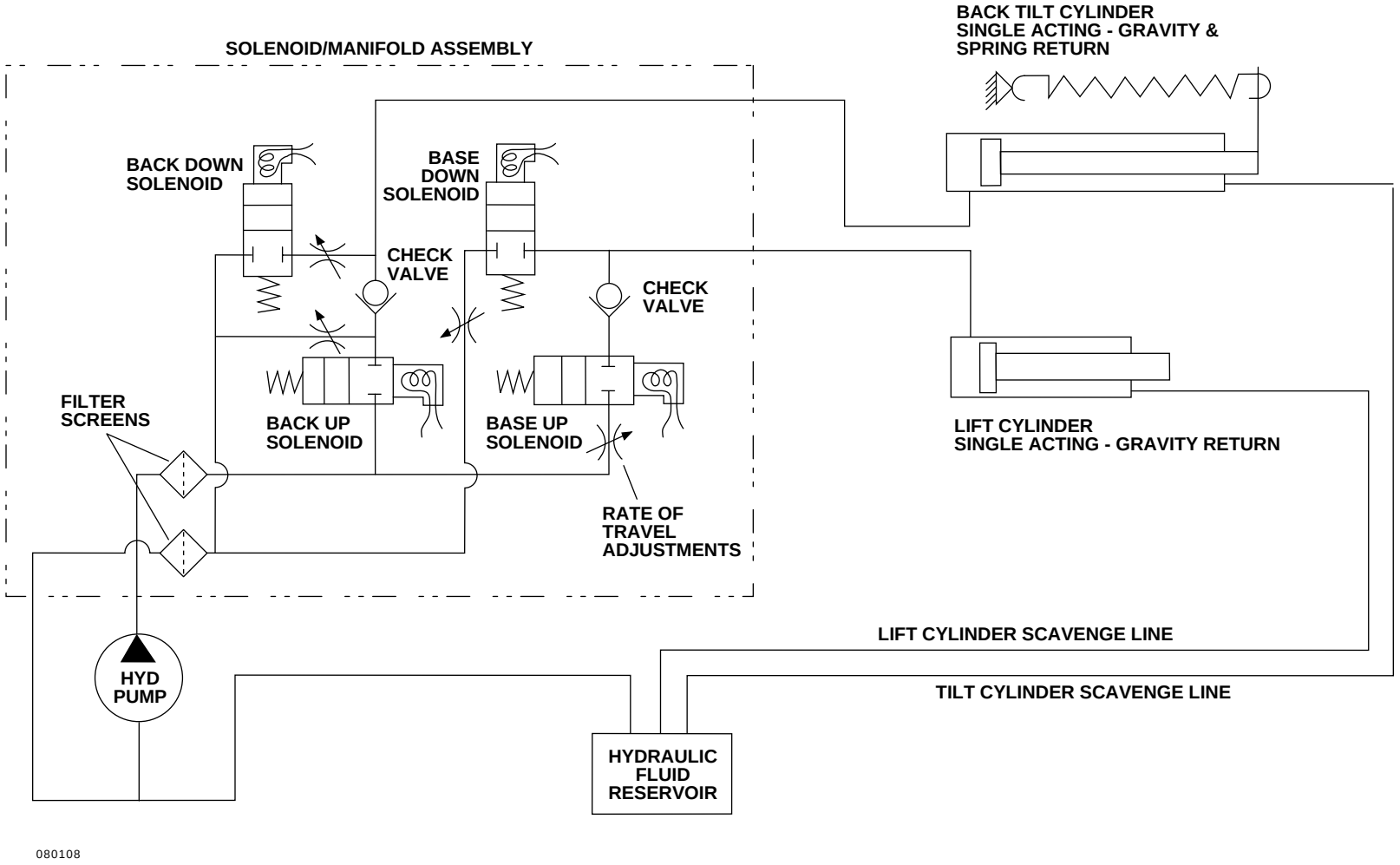

Figure 2-20. Model 1010/15/20 Dental Chair Hydraulic Schematic

Service and Support

Given proper care, A-dec Models 1010, 1015 and 1020 Dental Chairs will provide years of trouble-free service. In the event something does go wrong with the chair and you are unable to identify and correct the problem, you should call your authorized A-dec dealer or dental equipment supplier. Anytime you call your dealer or supplier, be prepared to provide the following information about the chair.

1. Model number*
2. Serial number*
3. Symptoms of the problem
4. What action you have taken toward correcting the problem.

* For more information about the chair serial number tag and where the tag can be found on the chair, refer to **Section 1, Introduction**, page 1-2.

SECTION 3

TROUBLESHOOTING

Introduction

The information in this section will help you find and repair chair failures. If you are unable to repair the chair, call your authorized A-dec dealer. When calling your dealer, refer to **Section 2, Service Information,** page 2-15 before calling.

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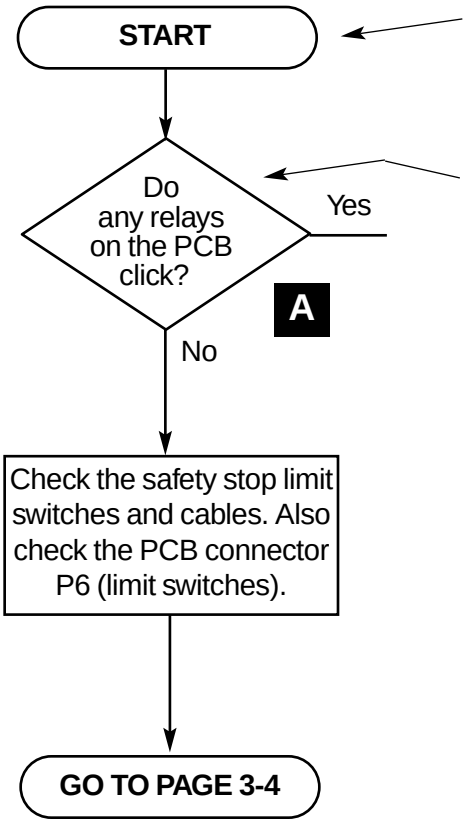
- G Depressurize the Hydraulic System 3-24
- H Adjust Base and Back Rate of Travel 3-24
- I Adjust a Base Up Limit Switch 3-25
- J Adjust the Base Positioning Pot 3-26
- K Adjust the Back Positioning Pot 3-27
- L Adjust Auto Positioning
  - Multifunction Footswitch 3-28
  - 8 Function Footswitch 3-28
- M Adjust Headrest Glidebar Tension 3-29
- N Adjust Double Articulating Headrest Pivot Tension 3-30

Navigating the Flow Charts

The troubleshooting flow charts in this section of the service guide provide a map for you to follow when troubleshooting the chair. Symptoms (a description of the failure) are printed at the top of each page (see page 3-1 for a complete list of symptoms).

Directly below each symptom is a list of things for you to check that might have caused the failure. If you already know how to troubleshoot the chair, using this list should be a faster way to fix the chair than following the flow charts.

The three kinds of symbols used in the flow charts are described for you below.


START
Do any relays on the PCB click?
Yes
A
No
Check the safety stop limit switches and cables. Also check the PCB connector P6 (limit switches).
GO TO PAGE 3-4

This symbol tells you where to start the flow chart or where to go next.

This symbol is a Decision Block. Decision blocks will ask you a question about the chair. If you need help in answering the question, the black box with a letter in it tells you that there is a detailed description of what to do (see page 3-1 for a complete list of detailed descriptions).

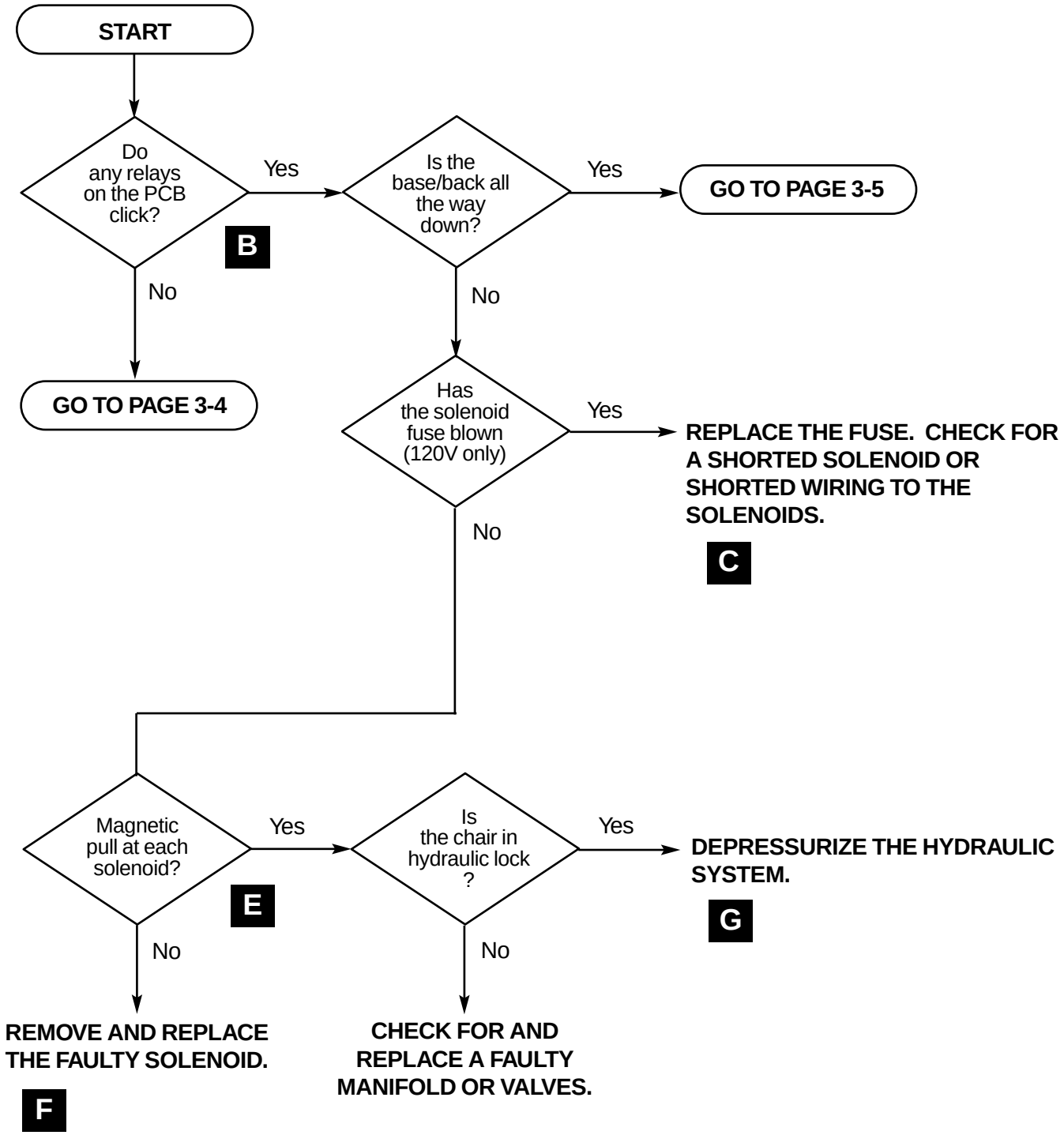
This symbol is a Task Block. Task blocks will give you things to check or do that should repair the chair.

1. **REPLACE THE FUSE.**
2. **CHECK FOR FAULTY SOLENOIDS.**

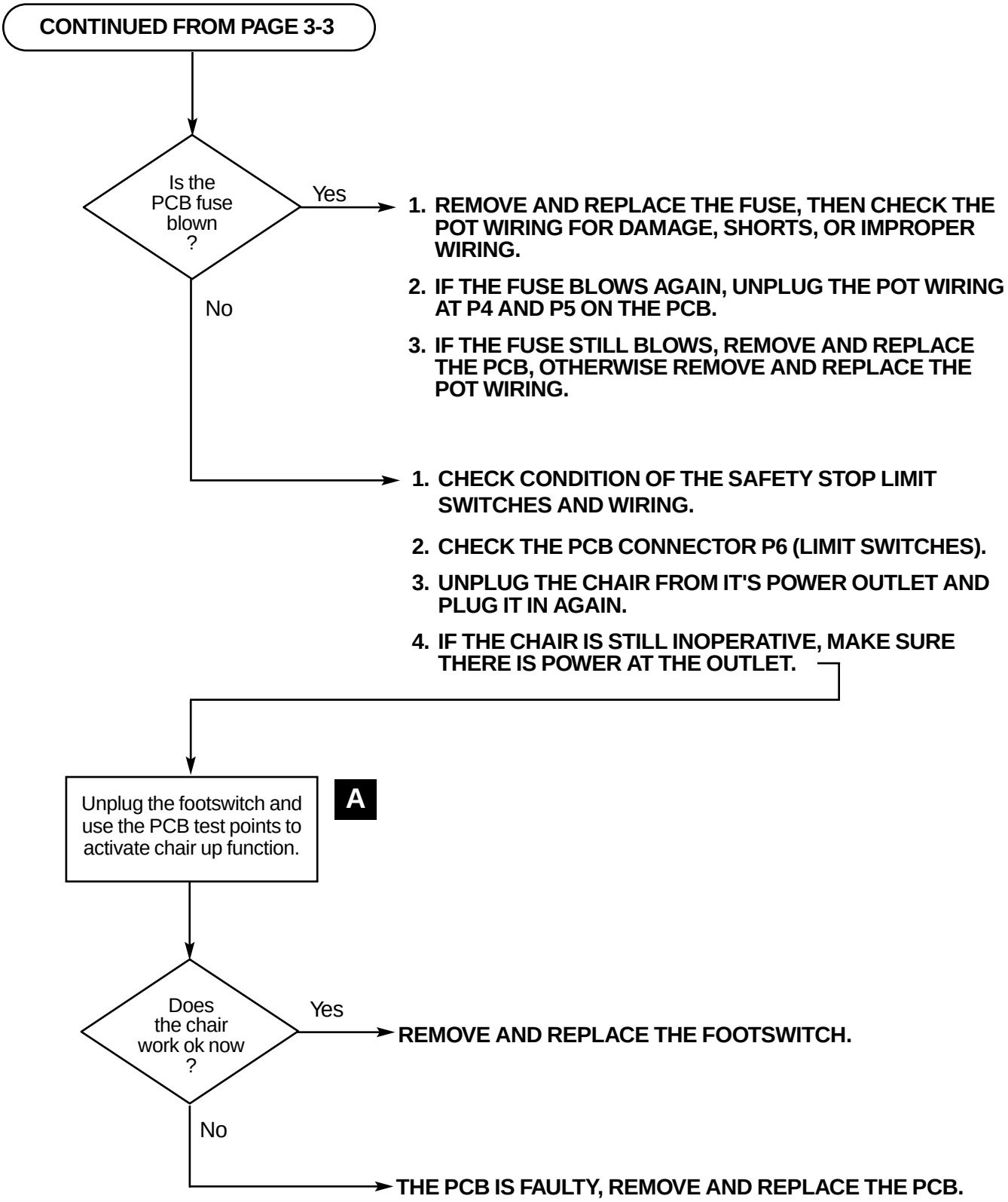
This is a list of things to do. Complete the list in the order listed.

What to look for:

A faulty base or back up limit switch.
No power available to the chair.
The chair is in hydraulic lock.
A blown power or solenoid fuse.
A faulty controller PCB or footswitch.



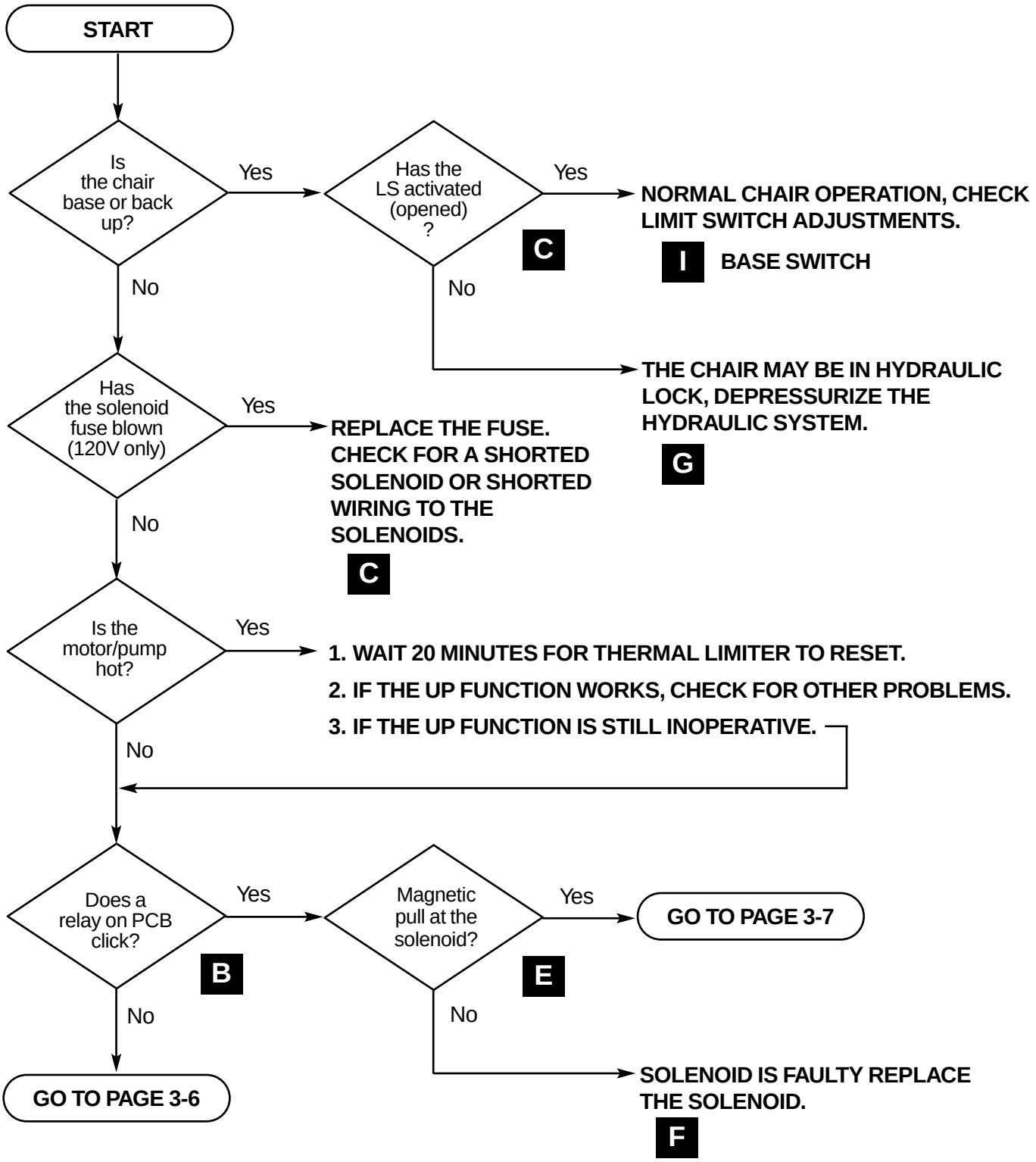
Chair is Inoperative


CONTINUED FROM PAGE 3-3
Is the PCB fuse blown ?
Yes
1. REMOVE AND REPLACE THE FUSE, THEN CHECK THE POT WIRING FOR DAMAGE, SHORTS, OR IMPROPER WIRING.
2. IF THE FUSE BLOWS AGAIN, UNPLUG THE POT WIRING AT P4 AND P5 ON THE PCB.
3. IF THE FUSE STILL BLOWS, REMOVE AND REPLACE THE PCB, OTHERWISE REMOVE AND REPLACE THE POT WIRING.
No
1. CHECK CONDITION OF THE SAFETY STOP LIMIT SWITCHES AND WIRING.
2. CHECK THE PCB CONNECTOR P6 (LIMIT SWITCHES).
3. UNPLUG THE CHAIR FROM IT'S POWER OUTLET AND PLUG IT IN AGAIN.
4. IF THE CHAIR IS STILL INOPERATIVE, MAKE SURE THERE IS POWER AT THE OUTLET.
Unplug the footswitch and use the PCB test points to activate chair up function.
A
Does the chair work ok now ?
Yes
REMOVE AND REPLACE THE FOOTSWITCH.
No
THE PCB IS FAULTY, REMOVE AND REPLACE THE PCB.

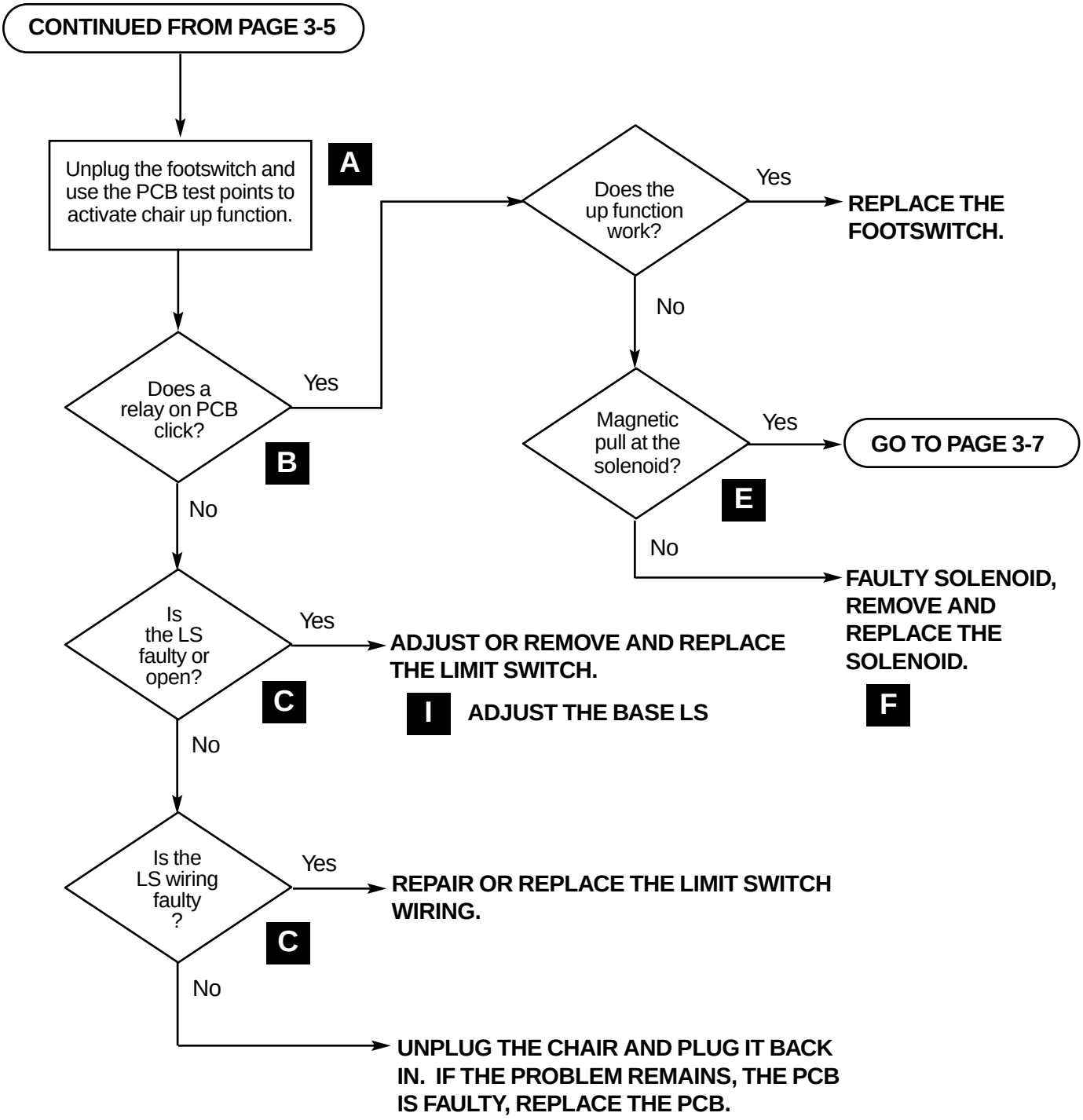
Base or Back Up Function is Inoperative

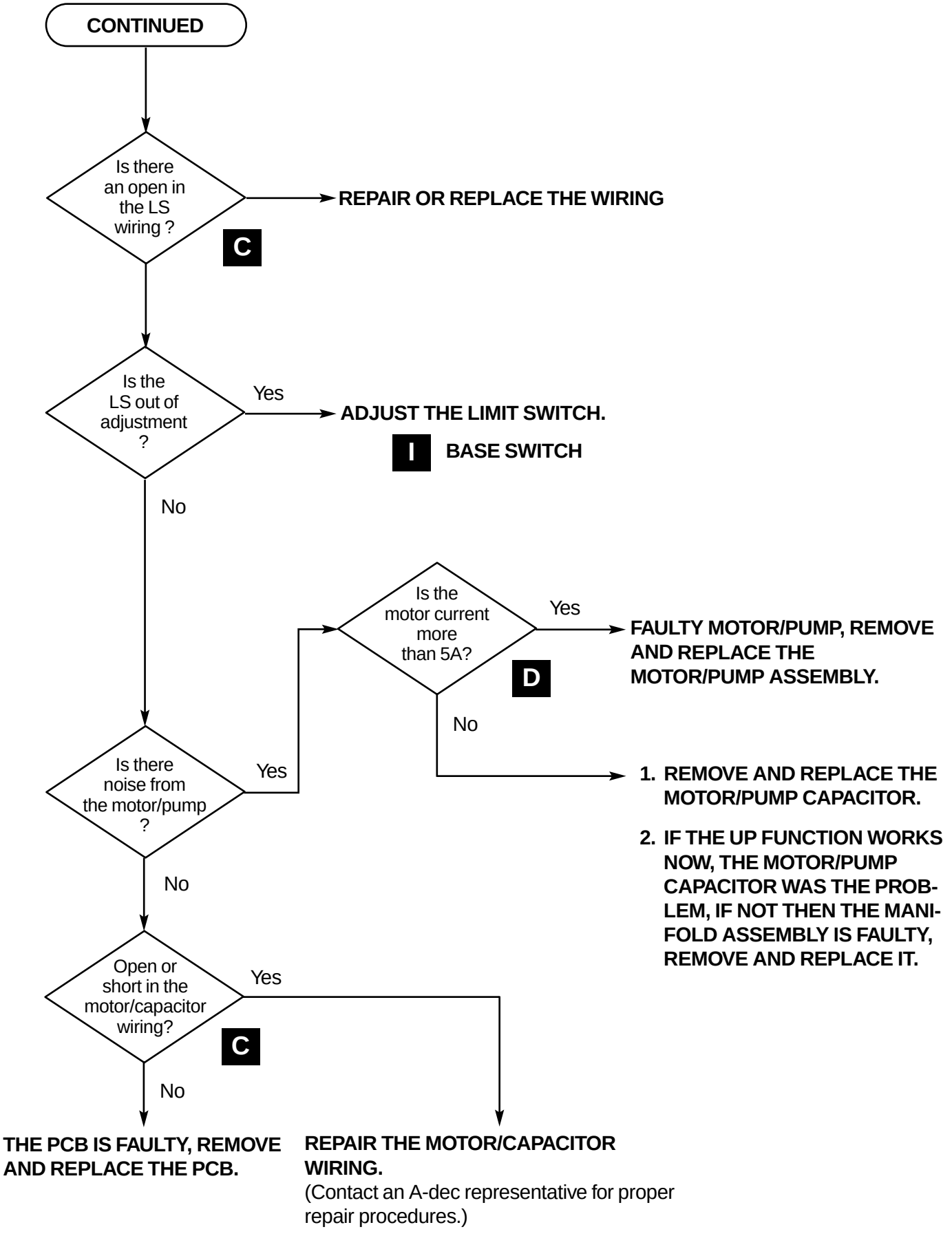
What to look for:

An overheated motor/pump.
The solenoid fuse has blown.
An open or faulty limit switch (LS).
A faulty manifold/valve.
The chair is in hydraulic lock.
A faulty footswitch, motor capacitor, or controller PCB.



Base or Back Up Function is Inoperative

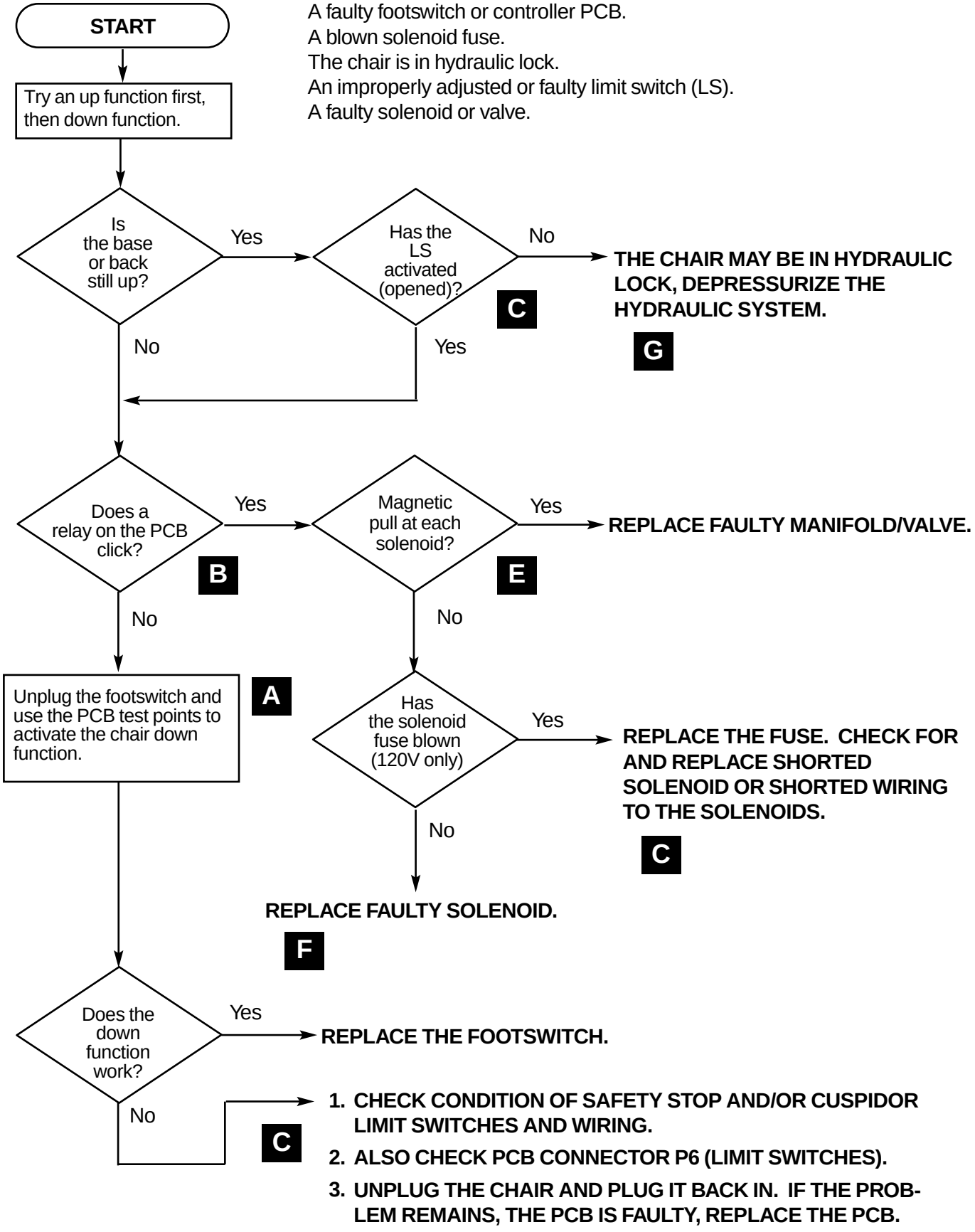



CONTINUED
Is there an open in the LS wiring ?
REPAIR OR REPLACE THE WIRING
C
Is the LS out of adjustment ?
Yes
ADJUST THE LIMIT SWITCH.
I
BASE SWITCH
No
Is the motor current more than 5A?
Yes
FAULTY MOTOR/PUMP, REMOVE AND REPLACE THE MOTOR/PUMP ASSEMBLY.
D
No
Is there noise from the motor/pump ?
Yes
No
1. REMOVE AND REPLACE THE MOTOR/PUMP CAPACITOR.
2. IF THE UP FUNCTION WORKS NOW, THE MOTOR/PUMP CAPACITOR WAS THE PROBLEM, IF NOT THEN THE MANIFOLD ASSEMBLY IS FAULTY, REMOVE AND REPLACE IT.
Open or short in the motor/capacitor wiring?
Yes
C
No
THE PCB IS FAULTY, REMOVE AND REPLACE THE PCB.
REPAIR THE MOTOR/CAPACITOR WIRING.
(Contact an A-dec representative for proper repair procedures.)

Base or Back Down Function is Inoperative

What to look for:

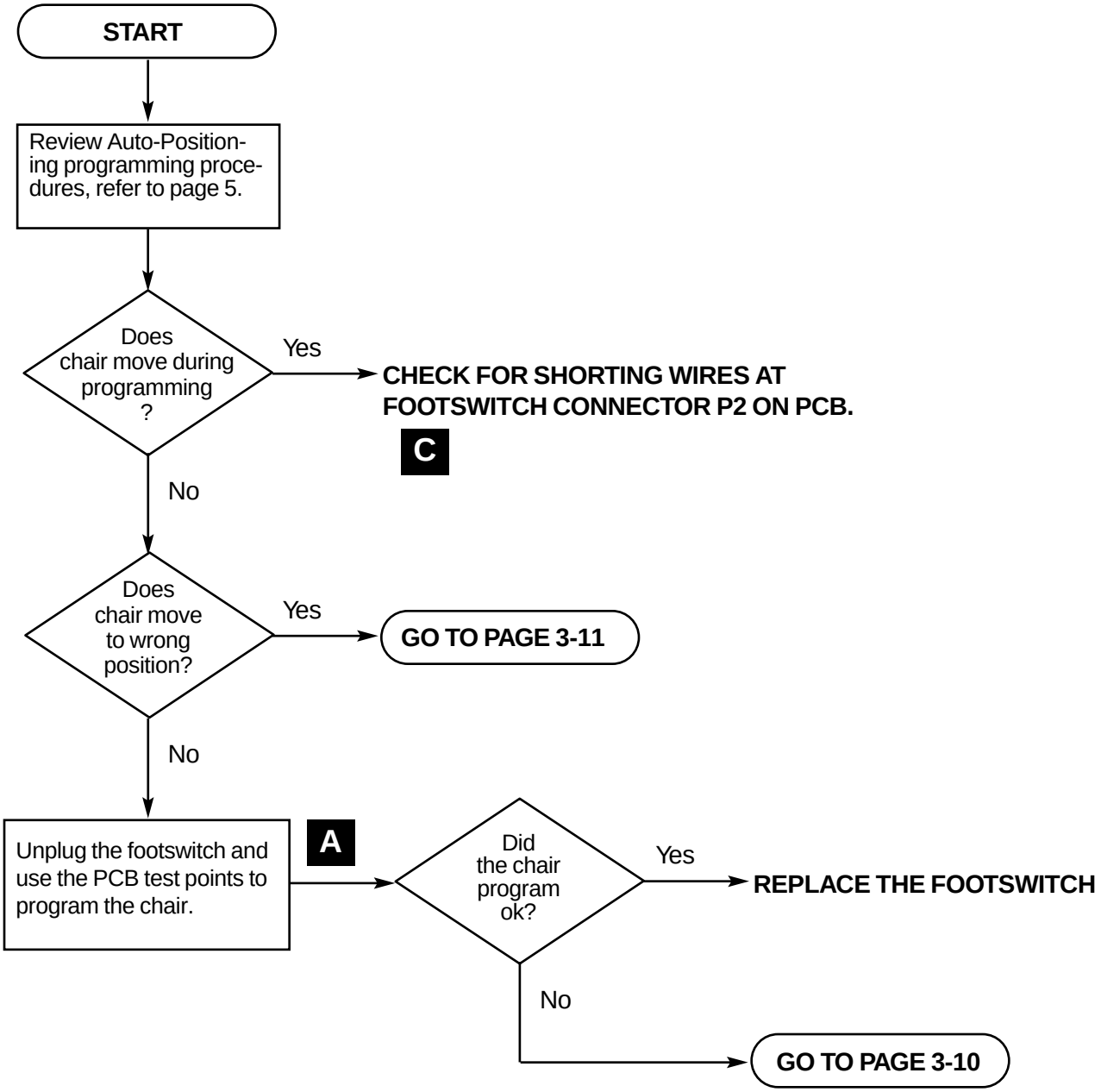
A Safety Stop switch or its wiring is open.
A faulty footswitch or controller PCB.
A blown solenoid fuse.
The chair is in hydraulic lock.
An improperly adjusted or faulty limit switch (LS).
A faulty solenoid or valve.


START
Try an up function first, then down function.
Is the base or back still up?
Yes
Has the LS activated (opened)?
No
THE CHAIR MAY BE IN HYDRAULIC LOCK, DEPRESSURIZE THE HYDRAULIC SYSTEM.
C
G
No
Yes
Does a relay on the PCB click?
Yes
Magnetic pull at each solenoid?
Yes
REPLACE FAULTY MANIFOLD/VALVE.
B
E
No
No
Unplug the footswitch and use the PCB test points to activate the chair down function.
A
Has the solenoid fuse blown (120V only)
Yes
REPLACE THE FUSE. CHECK FOR AND REPLACE SHORTED SOLENOID OR SHORTED WIRING TO THE SOLENOIDS.
C
No
REPLACE FAULTY SOLENOID.
F
Does the down function work?
Yes
REPLACE THE FOOTSWITCH.
No
C
1. CHECK CONDITION OF SAFETY STOP AND/OR CUSPIDOR LIMIT SWITCHES AND WIRING.
2. ALSO CHECK PCB CONNECTOR P6 (LIMIT SWITCHES).
3. UNPLUG THE CHAIR AND PLUG IT BACK IN. IF THE PROBLEM REMAINS, THE PCB IS FAULTY, REPLACE THE PCB.

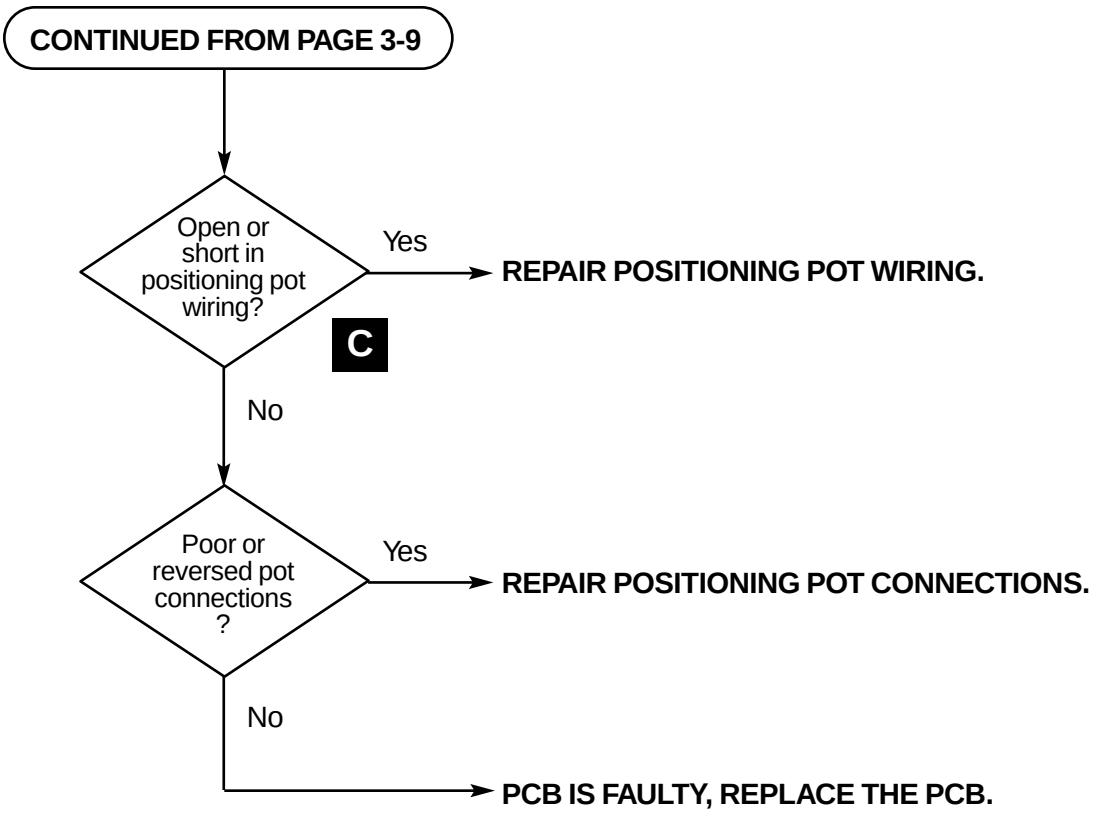
Unable to Program Auto-Positioning

What to look for:

Incorrect Auto-Positioning programming procedures.
A positioning potentiometer or wiring is faulty.
A faulty footswitch or printed circuit board (PCB).

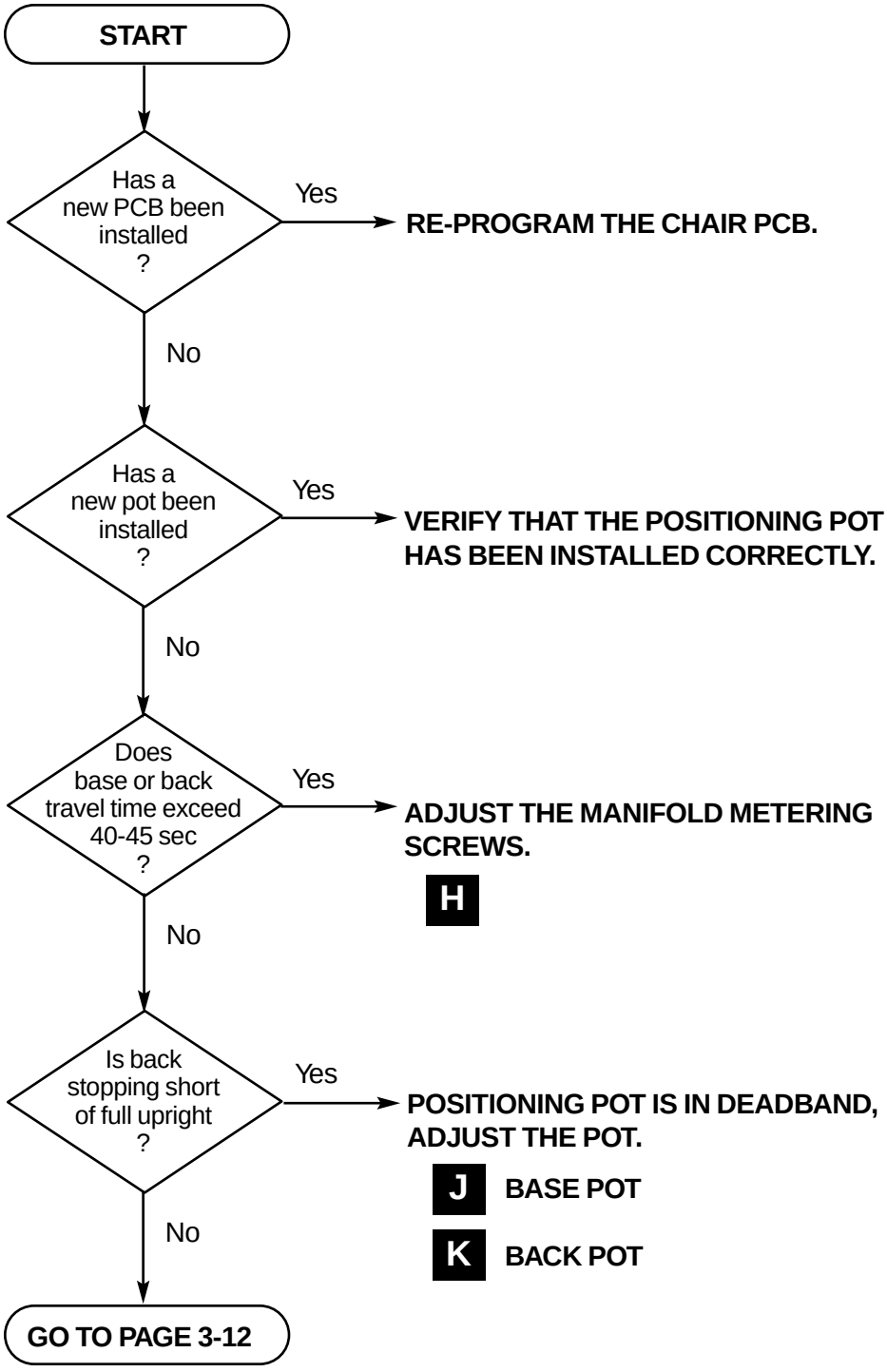


Unable to Program Auto-Positioning

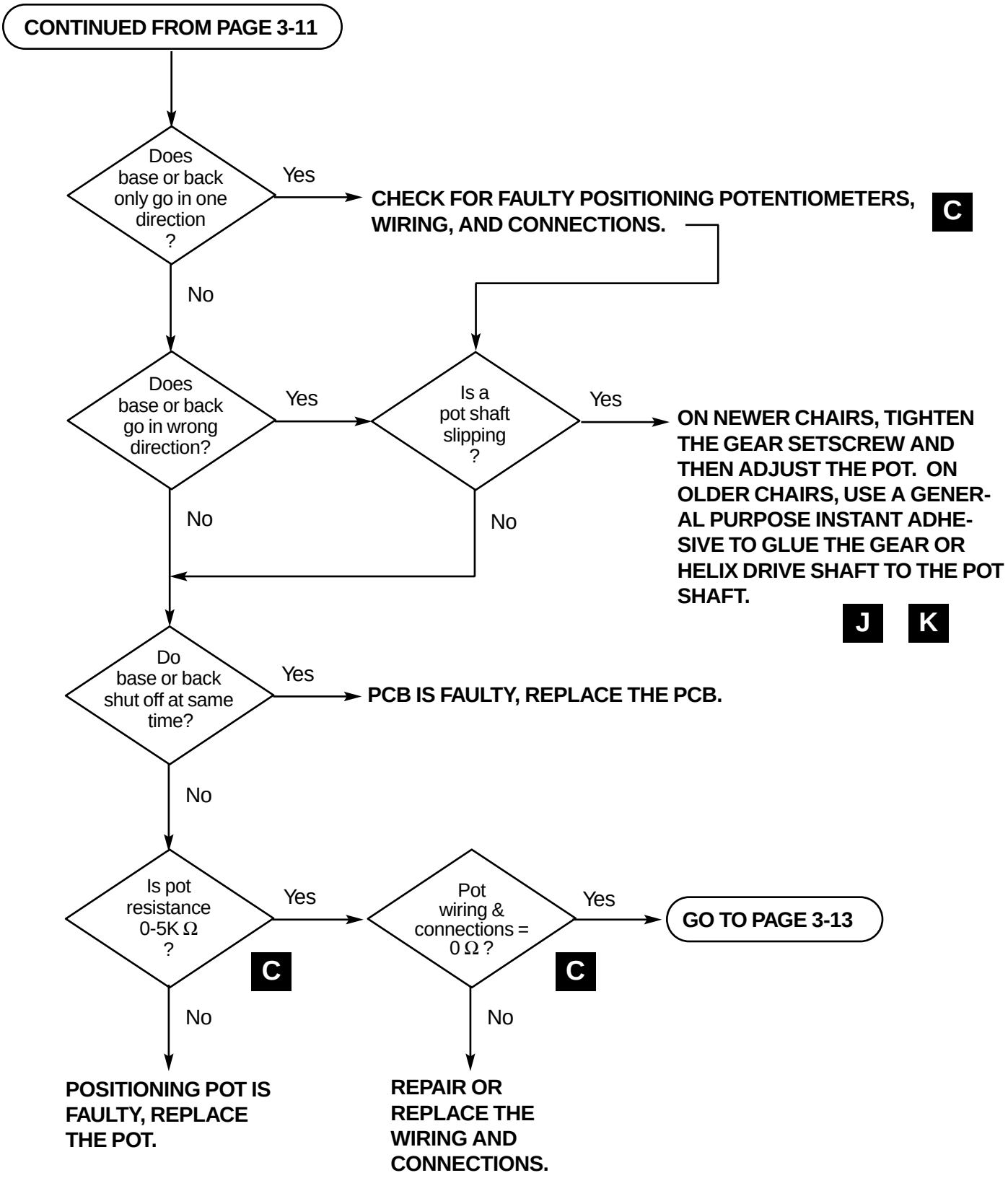


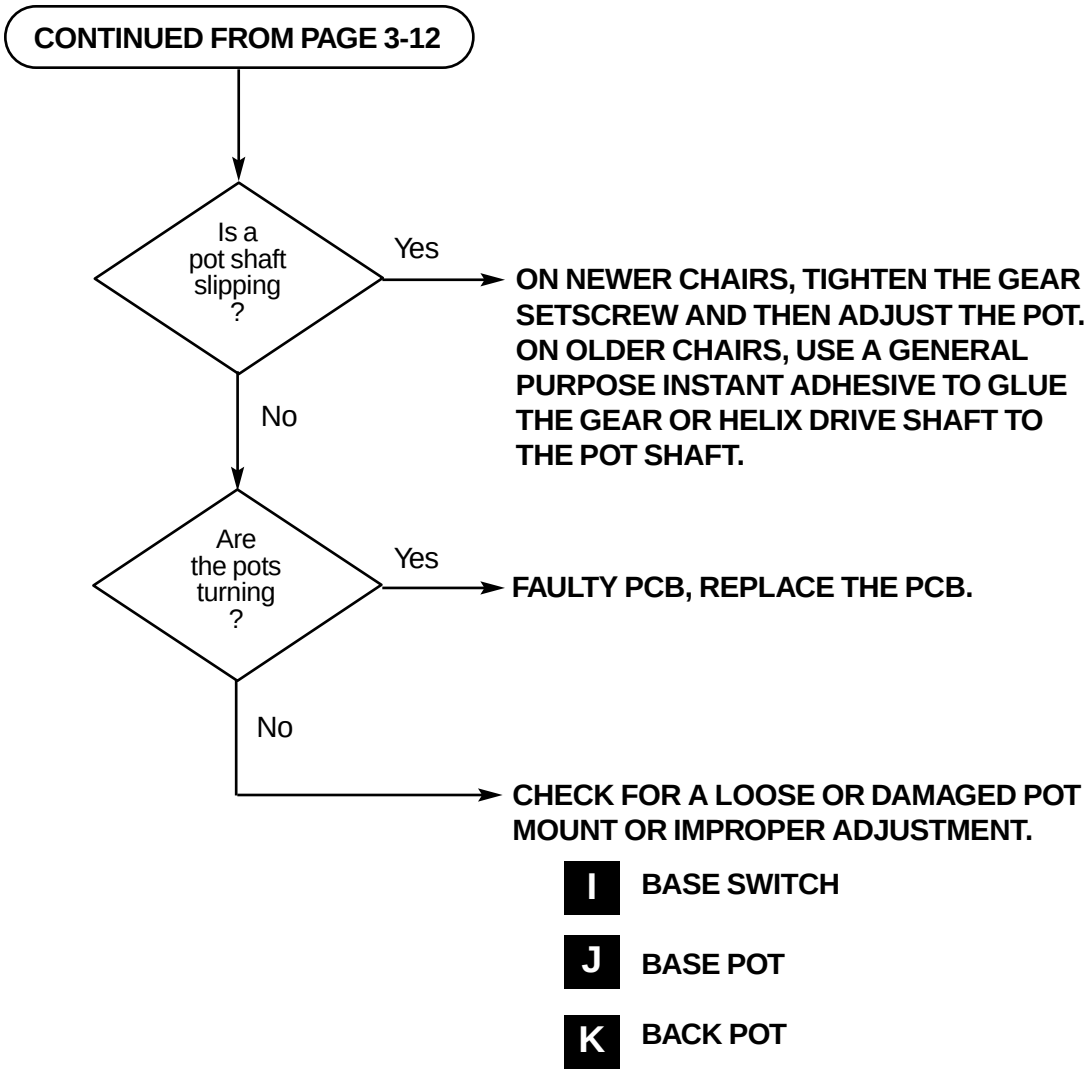
What to look for:

The positioning pot wiring is damaged.
Reversed or poor positioning pot connections.
A positioning pot is damaged or in deadband.
A positioning pot is not properly installed or adjusted.
A faulty controller PCB.
A new PCB that is not programmed for auto-positioning.
A loose or damaged positioning pot mount.



Incomplete Auto-Positioning Cycle

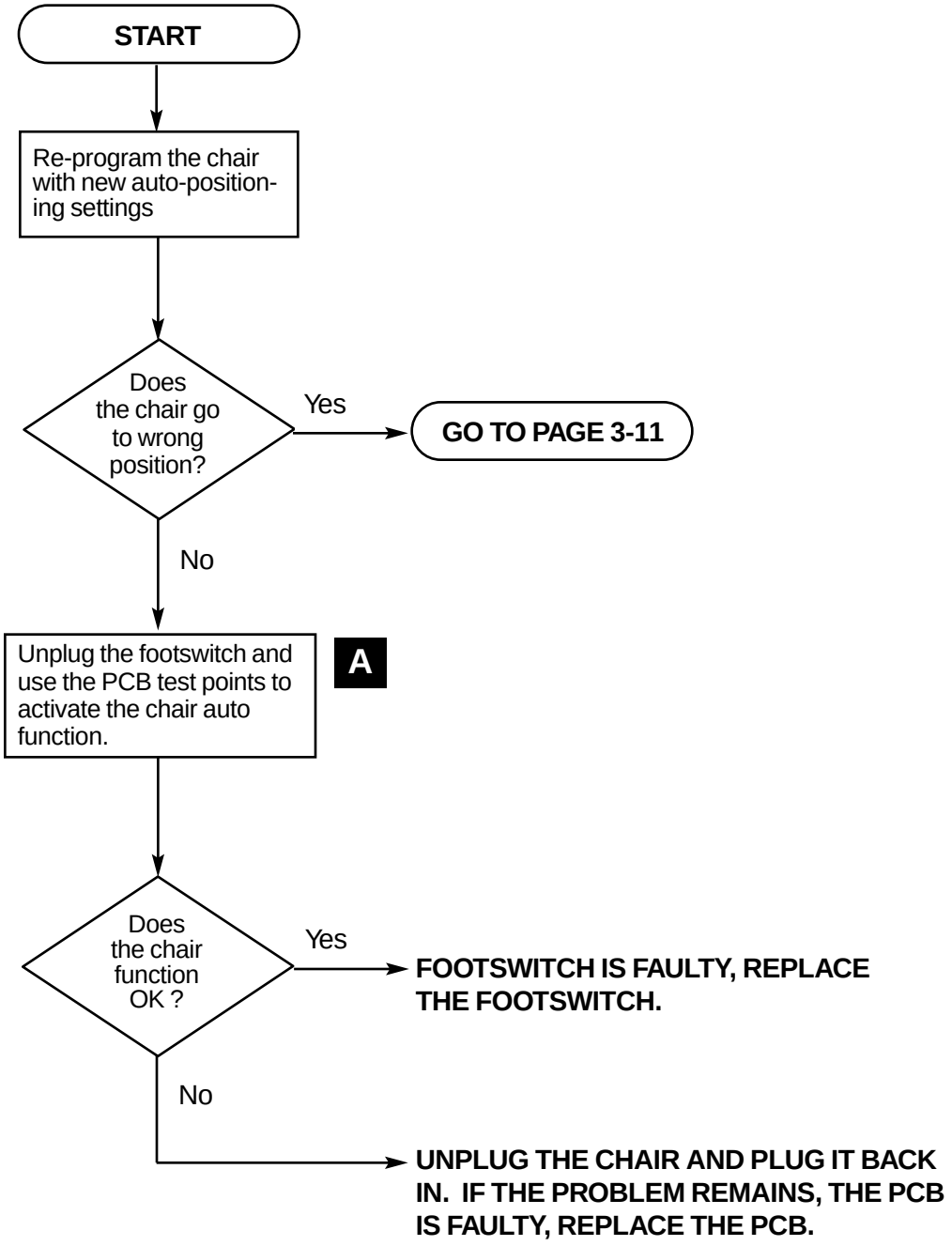

CONTINUED FROM PAGE 3-11
Does base or back only go in one direction ?
Yes
CHECK FOR FAULTY POSITIONING POTENTIOMETERS, WIRING, AND CONNECTIONS.
C
No
Does base or back go in wrong direction?
Yes
Is a pot shaft slipping ?
Yes
ON NEWER CHAIRS, TIGHTEN THE GEAR SETSCREW AND THEN ADJUST THE POT. ON OLDER CHAIRS, USE A GENERAL PURPOSE INSTANT ADHESIVE TO GLUE THE GEAR OR HELIX DRIVE SHAFT TO THE POT SHAFT.
J
K
No
No
Do base or back shut off at same time?
Yes
PCB IS FAULTY, REPLACE THE PCB.
No
Is pot resistance 0-5K Ω ?
Yes
C
Pot wiring & connections = 0 Ω ?
Yes
C
GO TO PAGE 3-13
No
No
POSITIONING POT IS FAULTY, REPLACE THE POT.
REPAIR OR REPLACE THE WIRING AND CONNECTIONS.


CONTINUED FROM PAGE 3-12
Is a pot shaft slipping ?
Yes
ON NEWER CHAIRS, TIGHTEN THE GEAR SETSCREW AND THEN ADJUST THE POT. ON OLDER CHAIRS, USE A GENERAL PURPOSE INSTANT ADHESIVE TO GLUE THE GEAR OR HELIX DRIVE SHAFT TO THE POT SHAFT.
No
Are the pots turning ?
Yes
FAULTY PCB, REPLACE THE PCB.
No
CHECK FOR A LOOSE OR DAMAGED POT MOUNT OR IMPROPER ADJUSTMENT.
I BASE SWITCH
J BASE POT
K BACK POT

Auto-Positioning Function Inoperative

What to look for:

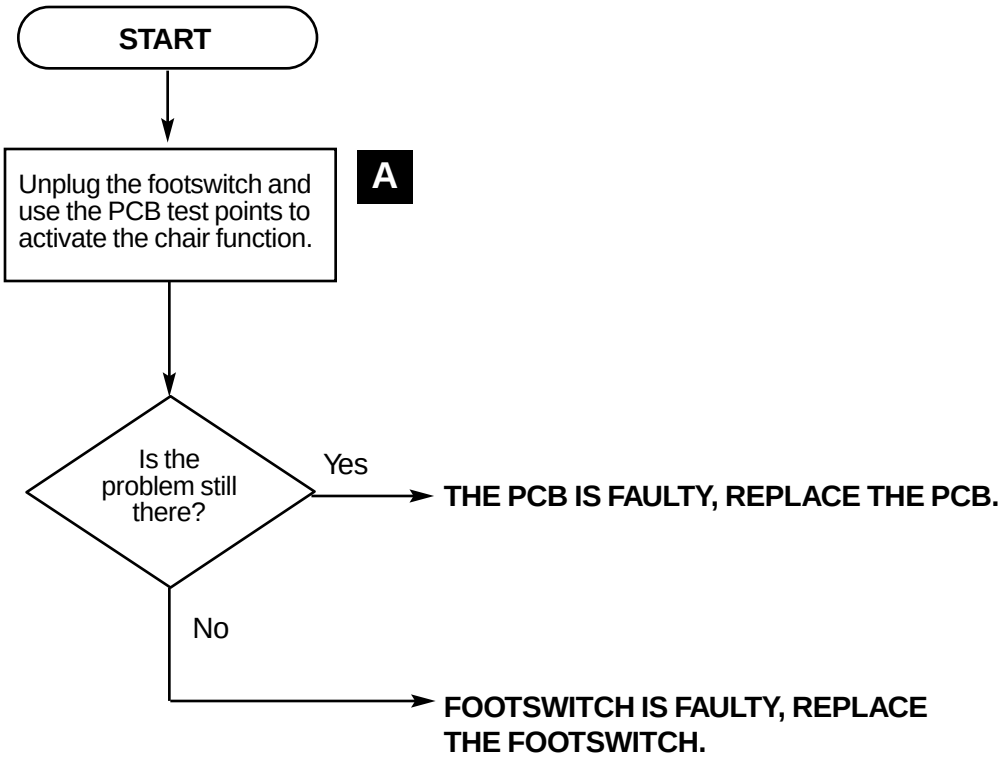
The positioning potentiometer wiring is faulty.
A faulty printed circuit board (PCB).
A positioning potentiometer is faulty.
A faulty footswitch.


START
Re-program the chair with new auto-position-ing settings
Does the chair go to wrong position?
Yes
GO TO PAGE 3-11
No
Unplug the footswitch and use the PCB test points to activate the chair auto function.
A
Does the chair function OK ?
Yes
FOOTSWITCH IS FAULTY, REPLACE THE FOOTSWITCH.
No
UNPLUG THE CHAIR AND PLUG IT BACK IN. IF THE PROBLEM REMAINS, THE PCB IS FAULTY, REPLACE THE PCB.

Back Moves for Base Only Function
or
Base Moves for Back Only Function

What to look for:

A faulty footswitch.
A faulty printed circuit board (PCB).


START
Unplug the footswitch and use the PCB test points to activate the chair function.
A
Is the problem still there?
Yes
THE PCB IS FAULTY, REPLACE THE PCB.
No
FOOTSWITCH IS FAULTY, REPLACE THE FOOTSWITCH.

Using the Chair Test Points A

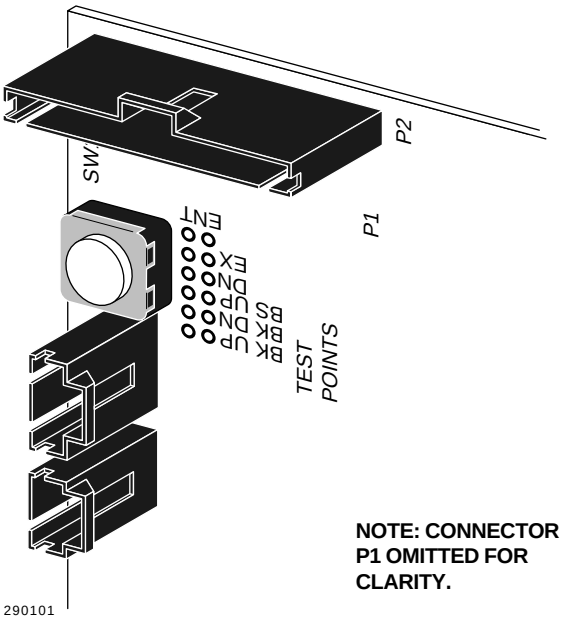


Figure 3-1. Chair Test Points

WARNING

HAZARDOUS AC VOLTAGES ARE PRESENT ON THE PCB, DO NOT TOUCH ANY PART OF THE PCB EXCEPT THE TEST POINTS.

The chair test points *(see Figure 3-1)* are used to test chair functions without a foot switch being connected to the PCB. For example, if you short the two test points beside the Base Up (BS UP) label on the PCB, the chair base will move up if not already in the full base up position. To access the test points, you must remove the motor/pump and PCB covers.

Relay Click Test B

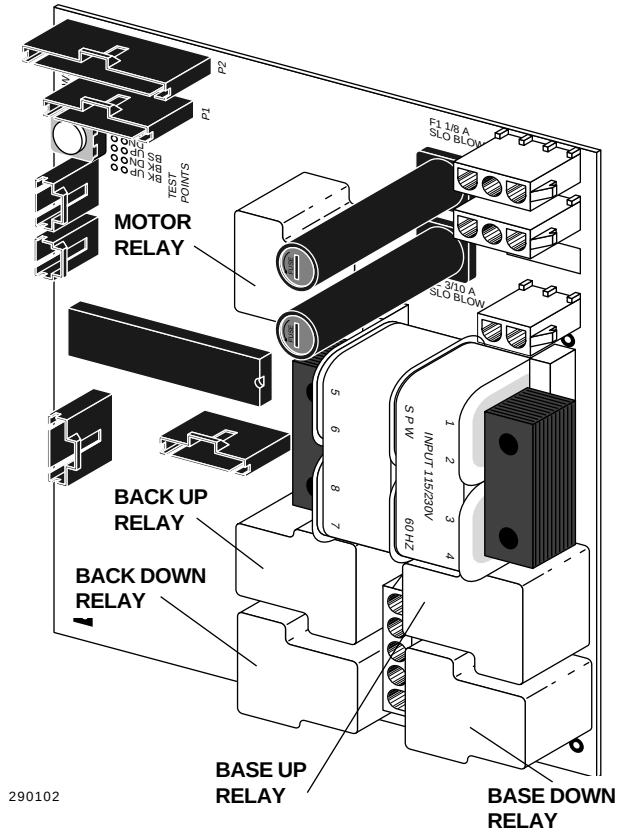


Figure 3-2. PCB Relays

If you listen when actuating any function on the footswitch you should hear a clicking noise coming from the PCB. Figure 3-2 identifies the five relays on the PCB by function. You can easily identify which relay is clicking, just note which function you have actuated and if you hear a clicking noise the relay is being energized. The motor relay is energized only for up functions.

C Continuity and Voltage Tests

WARNING

HAZARDOUS AC VOLTAGES ARE PRESENT ON THE PCB AND MOTOR/PUMP WIRING. FAILURE TO FOLLOW ALL SAFETY PRECAUTIONS MAY RESULT IN SERIOUS INJURY FROM ELECTRICAL SHOCK.

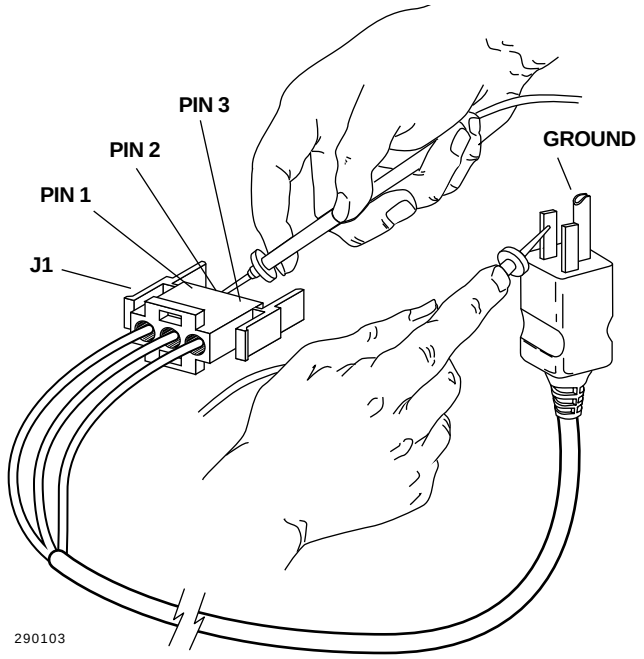


Figure 3-3. Power Cord Continuity Test

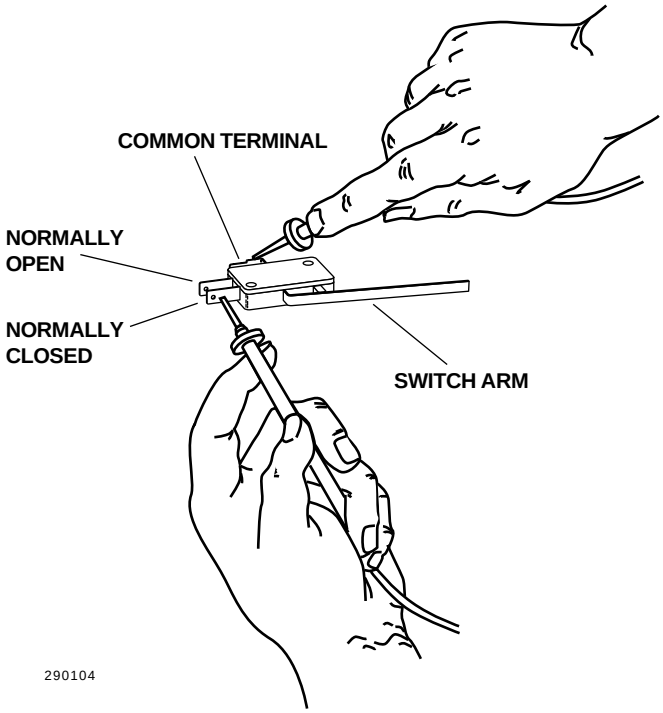


Figure 3-4. Limit Switch Continuity Test

Power Cord Continuity Test

WARNING

MAKE CERTAIN POWER HAS BEEN REMOVED FROM THE CHAIR BEFORE PROCEEDING. FAILURE TO REMOVE POWER FROM THE CHAIR WILL RESULT IN SERIOUS INJURY FROM ELECTRICAL SHOCK OR DEATH.

1. Disconnect the power cord (J1) from the chair Printed Circuit Board (PCB) *(see Figure 3-3).*
2. Touch a VOM probe to pin 1 of J1 and the other probe to first one and then the other blade of the power plug. One blade should give a reading of 1/2 ohm or less, the other blade should read infinite (∞) resistance. If both blades indicate infinite resistance, the power cord is defective and must be replaced.
3. Touch a VOM probe to pin 3 of J1 and repeat step two above.
4. Touch a VOM probe to pin 2 of J1 and the other probe to ground on the plug. The resistance should be 1/2 ohm or less.

Limit Switch Continuity Test

This test is applicable for testing either the Base Up or Back Up limit switches. For demonstration purposes, Figure 3-4 shows the Back Up limit switch.

1. Disconnect the wiring harness from the limit switch. It isn't necessary to remove a limit switch from the chair for this test.
2. Touch a VOM probe to the common terminal *(see Figure 3-4)* and the other probe to the normally open terminal and then to the normally closed terminal. The normally closed terminal should give a reading of 1/2 ohm or less, the normally open terminal should read infinite (∞) resistance. If both terminals indicate infinite resistance or indicate 1/2 ohm or less, the switch is defective and must be replaced.
3. If you are replacing a Base Up limit switch, complete the adjustment procedure on page 3-26.

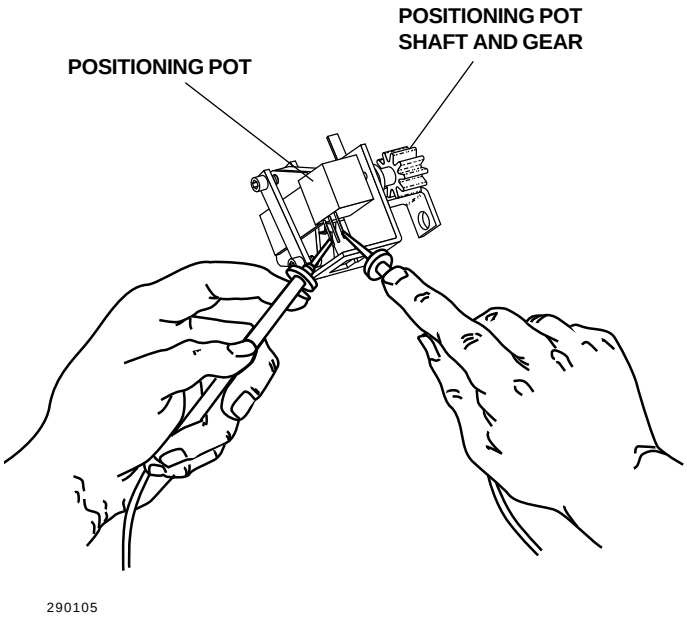


Figure 3-5. Positioning Pot Continuity Test

Positioning Potentiometer Continuity Test

This test is applicable for testing either the base or back positioning potentiometer (pot). For demonstration purposes, Figure 3-5 shows the base positioning pot.

1. Disconnect the wiring harness from the positioning pot and remove the pot assembly from the chair.
2. Touch a VOM probe to an outside pin of the pot *(see Figure 3-5)* and the other probe to the other outside pin. The total resistance of the pot should be approximately 4-6K Ω (5K Ω ±20%). If the pot resistance is outside the limits, the pot is defective and must be replaced.
3. Move one VOM probe to the center pin of the pot. While observing the VOM, slowly turn the pot shaft full one direction then the other. Your VOM should indicate a smooth increase or decrease in resistance as you turn the pot shaft. If the pot resistance fluctuates in a jerky manner while the shaft is being turned, the pot is defective and must be replaced.
4. When installing a positioning pot, complete the adjustment procedures on page 3-28 for the back positioning pot or page 3-27 for the base positioning pot.

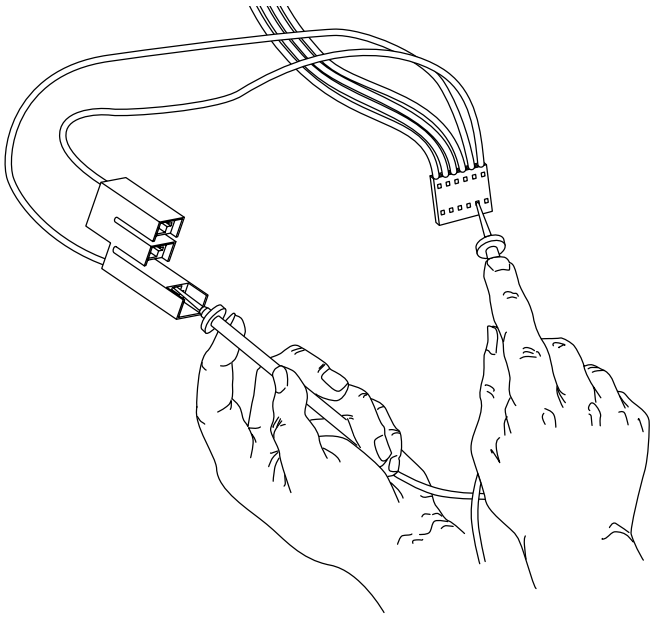


Figure 3-6. Wiring Harness Continuity Test

Wiring Harness Continuity Test

This test is applicable to testing a limit switch or positioning potentiometer wiring harness assembly. For demonstration purposes, Figure 3-6 shows the Base Up limit switch harness.

1. Disconnect the wiring harness from the limit switch or positioning potentiometer and the PCB. It isn't necessary to remove a wiring harness from the chair for this test.
2. Touch a VOM probe to pin 1 at one end of the harness *(see Figure 3-6)* and the other probe to pin 1 at the other end of the harness. The VOM should give a reading of 1/2 ohm or less. If the VOM indicates infinite or fluctuating resistance, the harness is defective and must be replaced.
3. Repeat step 2 for each wire in the harness.

Voltage Tests

The purpose of these tests is to verify that voltage is available at each of the limit switches and positioning potentiometers (pots).

Base and Back Positioning Pots

1. Touch the black probe of the VOM to the top pin of the pot and the red probe to the lower pin.
2. The voltage available should be approximately 5V (±1V). If the voltage is zero, the positioning pot wiring harness or the chair PCB should be replaced.

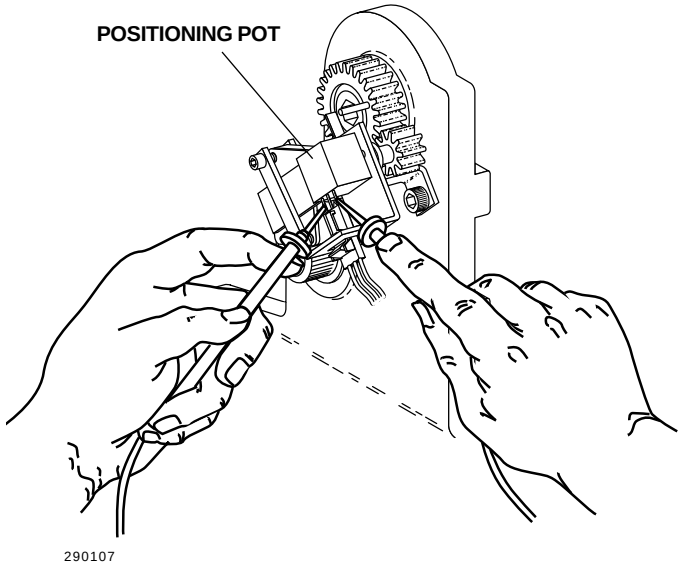


Figure 3-7. Positioning Pot Voltage Test

Limit and Safety Stop Switches

1. Disconnect the connector from the switch. Be sure to pull on the connector and not the wiring.
2. Touch a VOM probe to one pin of the connector and the other to the remaining pin.
3. The voltage available should be approximately 5V (±1V). If the voltage is zero, the switch wiring harness or the chair PCB should be replaced.

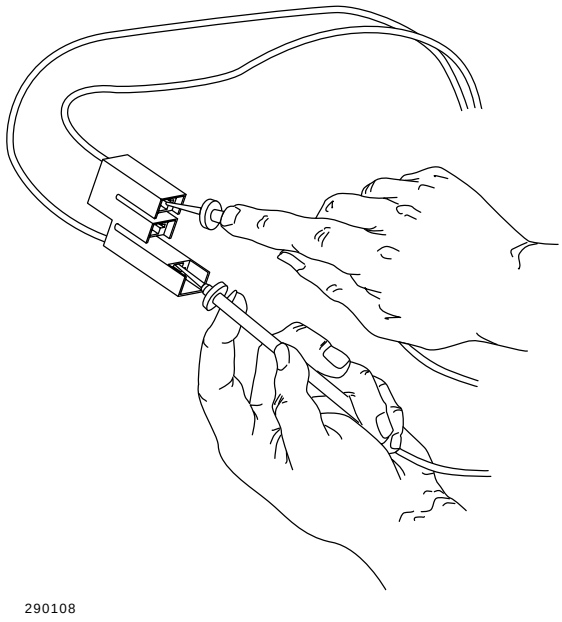
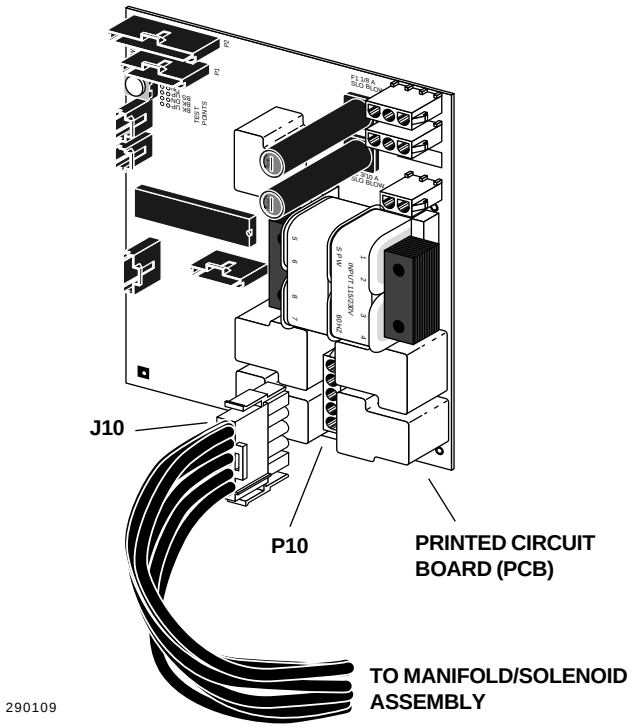


Figure 3-8. Switch Voltage Test



Solenoid Continuity Test

This test is applicable for testing 100, 120, and 240V solenoids.

1. Disconnect the solenoid wiring harness (J10) from the PCB *(see Figure 3-9)*.
2. Touch a VOM probe to pin 5 of J10 and the other probe to the pin for the suspect solenoid *(see Figure 3-10)*. Refer to the table below for acceptable resistance tolerances. If the solenoid resistance is outside the range specified, the solenoid is defective and must be replaced.

Solenoid P/N	Voltage	Resistance (Ω)	Range (Ω)
61-1335-00	100V	220	200-250
61-1336-00	120V	300	275-325
61-1337-00	240V	1250	1100-1300

Figure 3-9. Disconnect Solenoid Wiring Harness

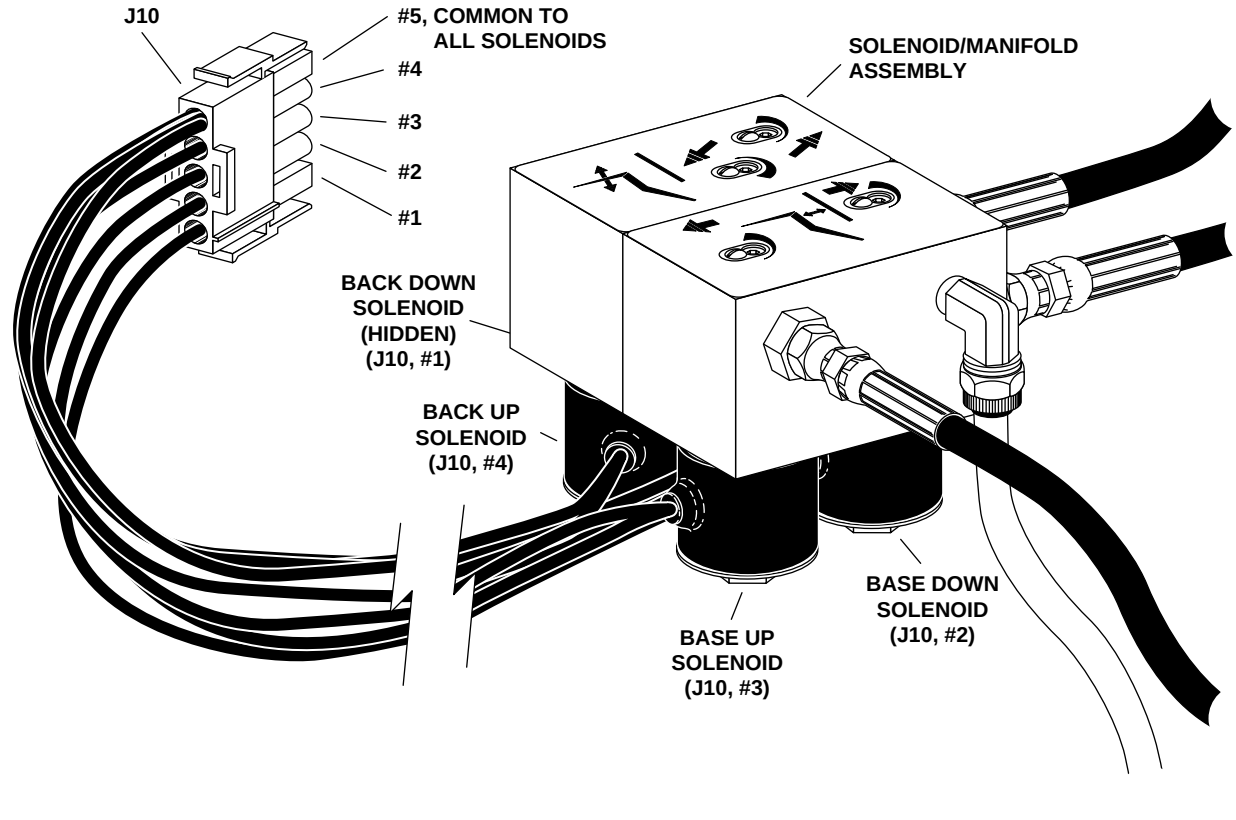


Figure 3-10. Solenoid Continuity Test

D Pump Motor Test

The Pump Motor Test requires the use of a current pickup probe. Clip the probe onto the red wire going to the motor/pump *(see Figure 3-11)* and activate a base or back up function. You should read 5 Amps (maximum) of current for this test (2.5 Amps for 240V motor/pumps).

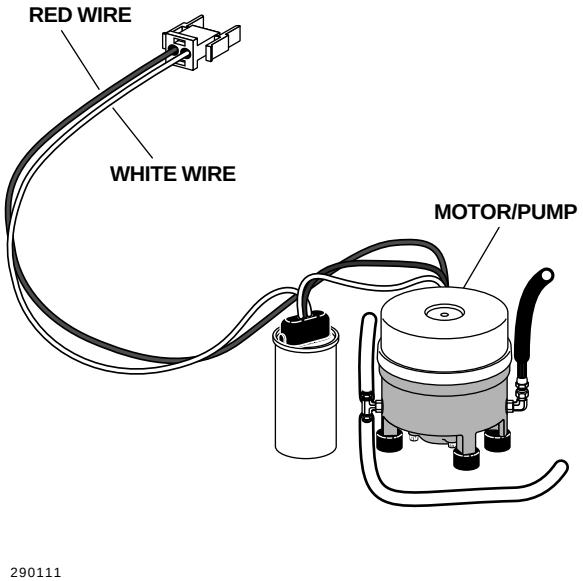


Figure 3-11. Pump Motor Current Test

E Testing Solenoids for Magnetic Pull

While holding the tip of a screwdriver near a solenoid as shown in Figure 3-12, activate the appropriate chair function. You should feel the tug of the magnetic field generated around the solenoid.

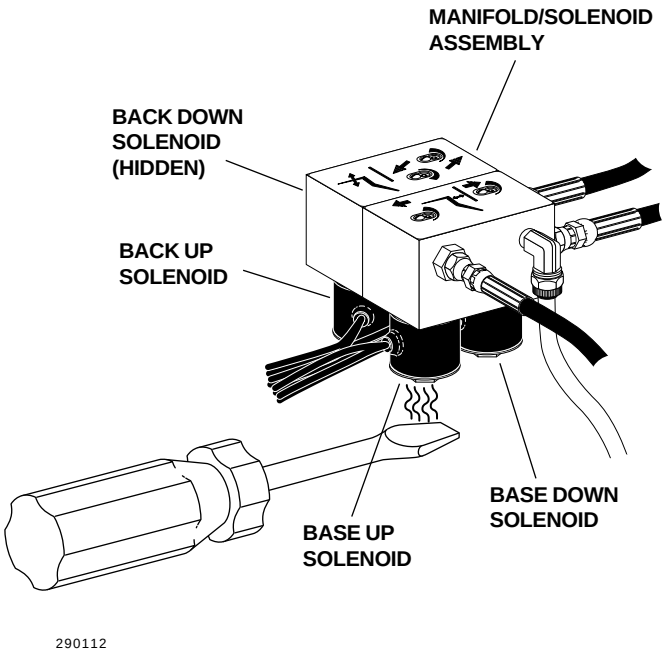


Figure 3-12. Testing Solenoids for Magnetic Pull

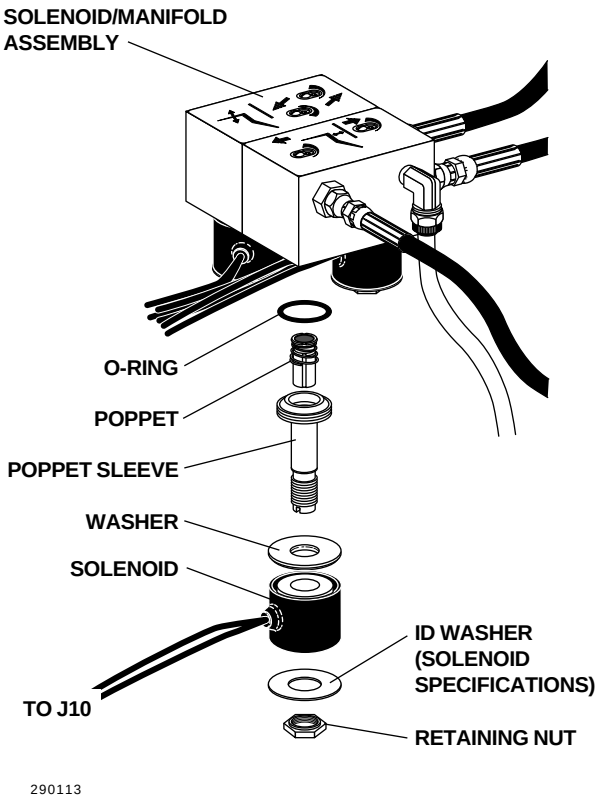


Figure 3-13. Remove and Replace a Solenoid

Refer to Figure 3-13 when completing the following steps.

1. Move the chair to the full base and back down position. Unplug the chair from its power outlet.

WARNING

THE SOLENOID COILS ARE POWERED BY LINE VOLTAGE (100, 120, OR 240V AC). FAILURE TO UNPLUG THE CHAIR MAY RESULT IN SERIOUS INJURY FROM ELECTRICAL SHOCK.

2. Using a pair of wire cutters, cut the wiring to the faulty solenoid at about midpoint between the solenoid and connector J10.
3. Using a 9/16" wrench, remove the solenoid retaining nut and slide the coil off the poppet sleeve.

NOTE

Use caution when removing and replacing the coil, the poppet sleeve is easily bent. Even slight bending of the sleeve will result in the malfunction of the solenoid valve.

4. Using a flat-tipped screwdriver, loosen, then remove the sleeve and poppet from the manifold assembly.

WARNING

TO PREVENT THE POSSIBILITY OF OVERHEATING AND FAILURE, REPLACE THE ENTIRE SOLENOID ASSEMBLY.

5. Remove the o-ring from inside the manifold.
6. Install a new o-ring in the manifold.
7. Install a new sleeve and poppet in the manifold. Tighten the poppet sleeve using a flat-tipped screwdriver.
8. Install a new coil on the plunger, do not overtighten the retaining nut.
9. Strip approximately 1/4" of insulation from the wires cut in step 2 above and install a crimp-on butt-type connector on each wire.
10. On the new solenoid, cut the wiring to length allowing enough to reach the crimped-on connectors. Strip approximately 1/4" of insulation from the wires and crimp each wire into a connector.

G Depressurizing the Hydraulic System

1. Using a 5/32-inch hex key, remove the motor/pump cover from the chair.
2. Fit a 5/8" open end wrench to the high pressure outlet port (either the lift or tilt, whichever is in hydraulic lock) of the manifold/solenoid assembly *(see Figure 3-14)*.
3. Wrap a rag around both the fitting and the end of the wrench. The rag will absorb the small amount of hydraulic fluid vented from the fitting.
4. Carefully loosen the fitting about one-half turn counterclockwise and re-tighten.
5. Cycle the chair a couple of time to verify it is no longer in hydraulic lock.

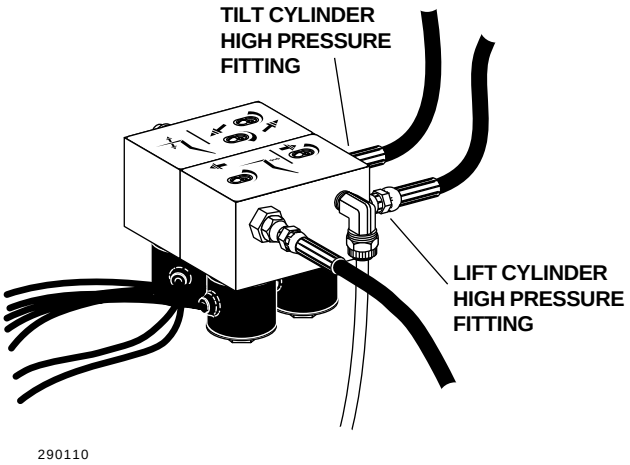


Figure 3-14. Depressurizing the Hydraulic System

H Adjust Base and Back Rate of Travel

The manifold/solenoid assembly incorporates four needle valves *(see Figure 3-15)* which restrict or divert the flow of hydraulic fluid to and from the lift and tilt cylinders. These valves provide the rate of travel adjustment for chair base and back movement. The rate of travel for both the base and back is factory pre-set at 12 seconds, plus or minus 1 second.

CAUTION

Do not completely close a needle valve port. The motor/pump could overheat from pumping against a closed valve and be damaged.

Note that the needle valves are hex drive, the small slot-head screws are the needle valve retaining screws and should not be removed.

Rate of travel adjustments should be made with 160-200 lbs (73-91 kg). (the weight of an average person) in the chair and the hydraulic fluid should be at room temperature.

To adjust the rate of travel for Base Up/Down or Back Down, use a 3/32-inch hex key and turn the needle valve clockwise (in) to decrease the rate of travel, counterclockwise (out) to increase. To adjust the rate of travel for Back Up, turn the needle valve counter-clockwise (out) to decrease the rate of travel, clock-wise (in) to increase.

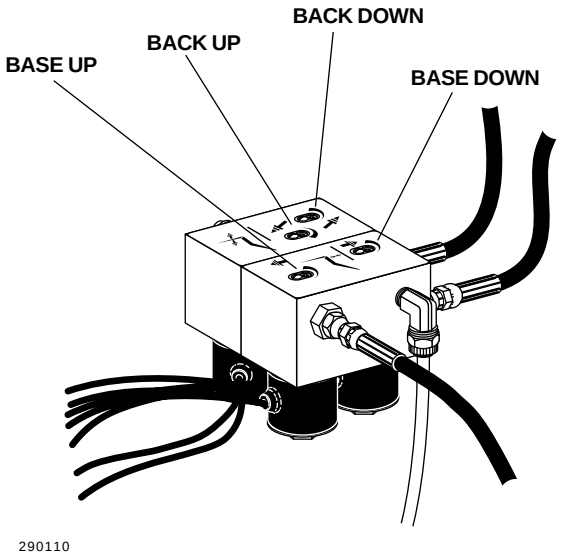


Figure 3-15. Adjusting Rate of Travel

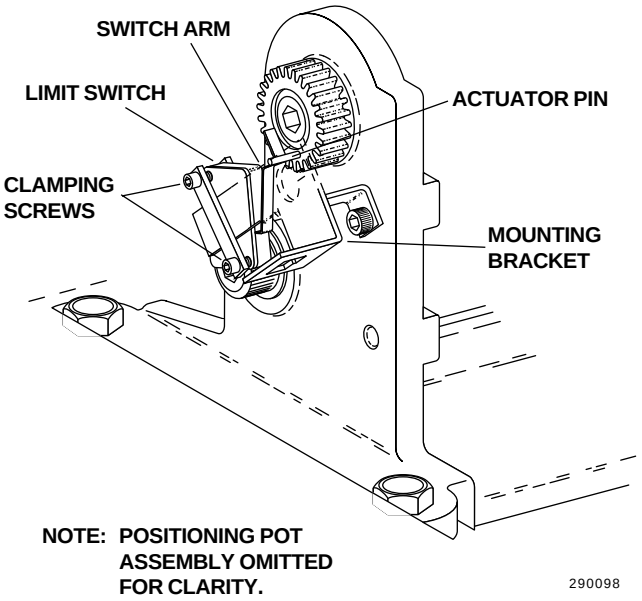


Figure 3-16. Adjust the Base Up Limit Switch

To adjust the base up limit switch:

1. Using a 5/32-inch hex key, remove the three screws securing the motor/pump cover to the chair and set the cover aside.
2. Using a 3/32-inch hex key, loosen the two screws clamping the limit switch to the mounting bracket *(see Figure 3-16)*.
3. Position the chair as shown in Figure 3-17. Measure from the top of the base plate to the flat area around the threaded stud the chair adapter mounts to.
4. Push the limit switch against the actuator pin *(see Figure 3-16)* on the drive gear until the switch opens (clicks), then tighten the clamping screws.
5. Position the chair base down until the limit switch has closed, then position the chair full base up. Check the distance between top of the base plate to the flat area around the threaded stud the chair adapter mounts to. If the distance isn't correct, repeat steps 2 through 4.

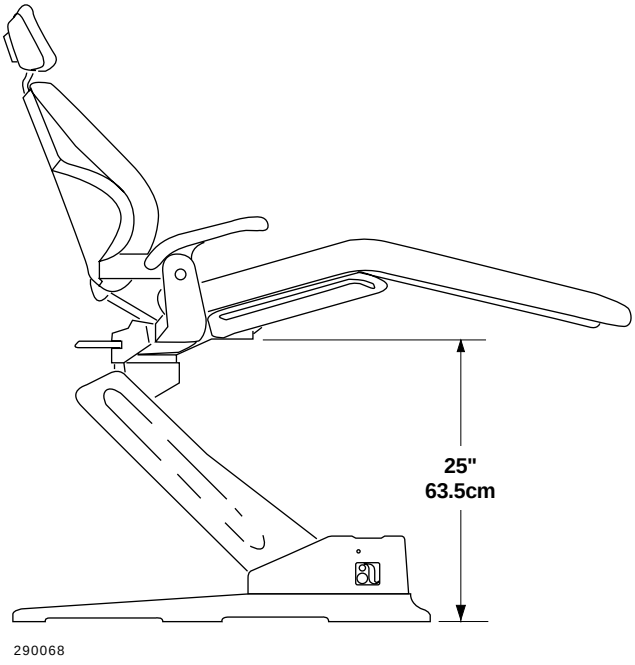


Figure 3-17. Setting Chair Height

J Adjust the Base Positioning Potentiometer

To adjust the base positioning potentiometer (pot):

1. Using a 5/32-inch hex key, remove the motor/pump cover and set the cover aside.
2. Position the chair as shown in Figure 3-17. Measure from the top of the base plate to the flat area around the threaded stud the chair adapter mounts to.
3. Using a 3/16-inch hex key, remove the limit switch and pot assembly mounting screw *(see Figure 3-18)*.
4. Turn the gear on the pot shaft counterclockwise until it stops *(see Figure 3-18)*.
5. Align the pot assembly as shown in Figure 3-18 then turn the pot drive gear clockwise two teeth (relative to a tooth on the large drive gear).
6. Reinstall the limit switch and pot assembly Make sure that the pot gear does not turn and that the two gears mesh properly.
7. Check the electrical connections to the limit switch and positioning pot, make sure the connections are proper.
8. While observing the two gears for binding, lower the chair base. **Do not** raise the base to full base up until after you've checked the base up limit switch for proper adjustment, the chair may go into hydraulic lock.
9. Reinstall the motor/pump cover.
10. Program the auto-positioning functions.

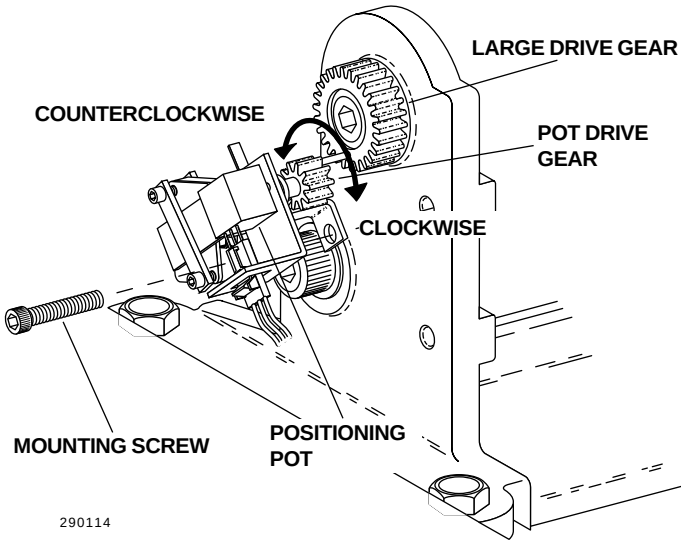


Figure 3-18. Adjust the Base Positioning Pot

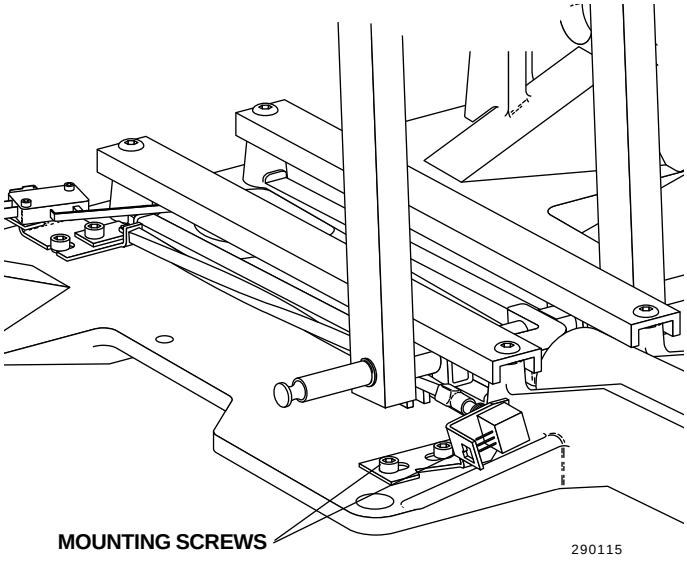


Figure 3-19. Back Positioning Pot Assembly

To adjust the back positioning (pot) potentiometer:

1. Position the chair back **full down**.
2. Lift the toeboard and swing the roller bar assembly up under the hook welded to the underside of the toeboard. Lower the toeboard hook onto the roller bar assembly.
3. Using a 3/16-inch hex key, remove the positioning pot assembly mounting screws *(see Figure 3-19)*.
4. Remove the positioning pot assembly and helical drive shaft from the chair.
5. Pull the helical drive shaft off the pot shaft.
6. Install the helical drive shaft in the chair as shown in Figure 3-20.
7. Turn the positioning pot full counterclockwise *(see Figure 3-21)*.
8. Reinstall the pot assembly on the helical drive shaft.
9. Check the electrical connections to the limit switch and positioning pot, make sure the connections are proper.
10. Reprogram the auto-positioning functions.

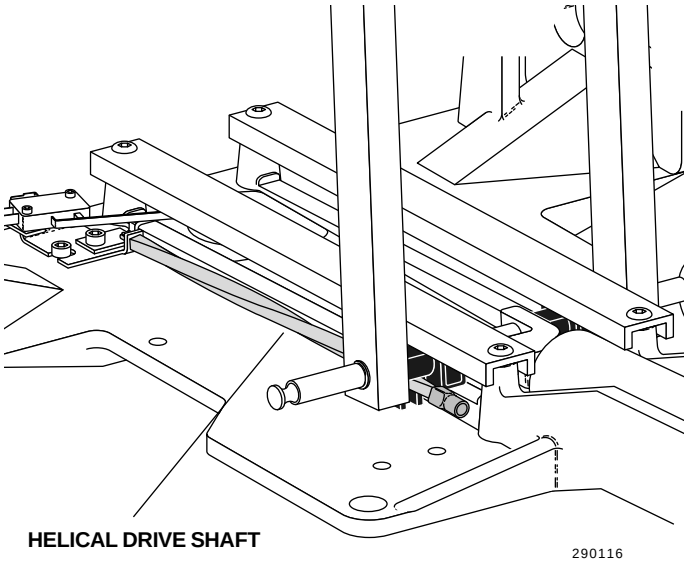


Figure 3-20. Install the Pot Drive Shaft

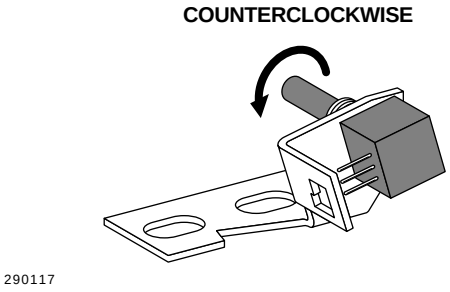


Figure 3-21. Setting the Back Positioning Pot

L Adjust Auto Positioning
Multifunction Footswitch

Using the footswitch, set the chair to the desired position. For chairs manufactured prior to December 21, 1990, insert a probe that is approximately 3/l6–inch in diameter and 3 inches long into the hole located on the right side of the motor compartment cover *(see Figure 3-22)*. Momentarily push the probe in gently (actuating the store button) and, within four seconds, press the GREEN (Pre–Position) or RED (Auto–Return) button on the foot switch to store the position.

Chair S/N L086602 and newer have a rubber grommet–type button which eliminates the need for a probe to actuate the auto–positioning store button.

Later chairs include an audible tone generator. An audible tone confirms programming operations.

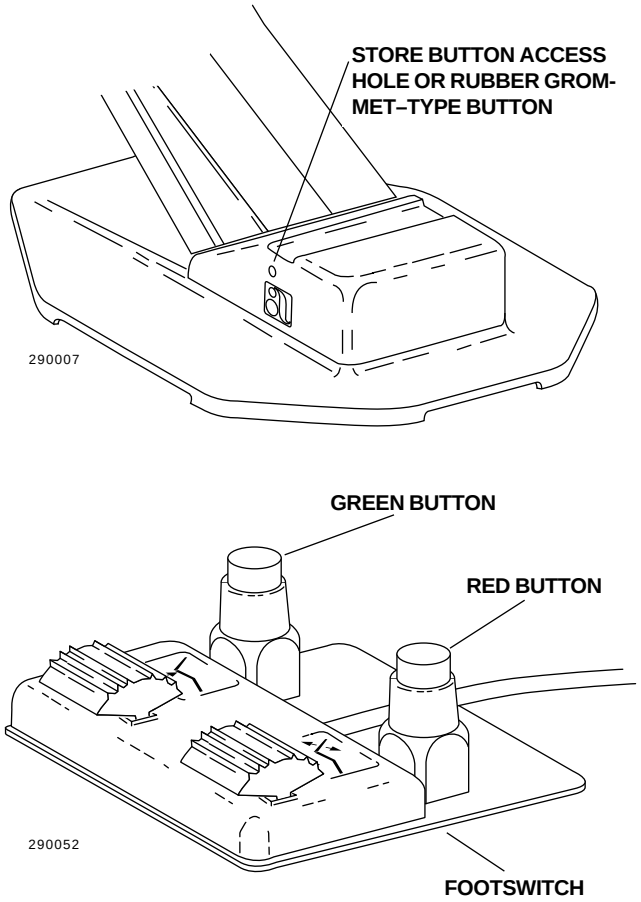


Figure 3-22. Programming the Chair

L Adjust Auto Positioning
8 Function Footswitch

Using the footswitch, set the chair to the desired position. Press and release the program button *(see Figure 3-22A)*. An audible tone will be heard. Within four seconds, press the right actuator *(see Figure 3-22A)* to the function (1, 2 or 3) you want this chair position to be stored. Now you should hear an audible tone confirming that the function has been programmed.

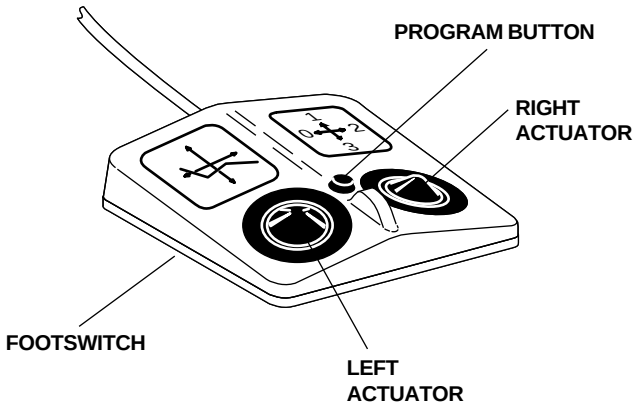


Figure 3-22A. Programming the Chair

Function 3 can optionally be either Cuspidor/Return, Last Position, or a user programmable function.

Cuspidor/Return is used to raise the chair back to a programmable upright position providing the patient access to the cuspidor. Momentarily pushing the right actuator to position 3 a second time lowers the chair back to its previous operating position.

Last Position is a non-programmable function that simply moves the chair base and back to the positions that they were in previously. Using this feature allows the chair to be moved back and forth between two positions by momentarily pushing the right actuator to position 3.

Switches S1 and S2 on the circuit board is used to select the function for Function 3.

Function	Switch 1	Switch 2
Cuspidor/Return	OFF	OFF
Last Position	ON	OFF
User Programmable	OFF	ON

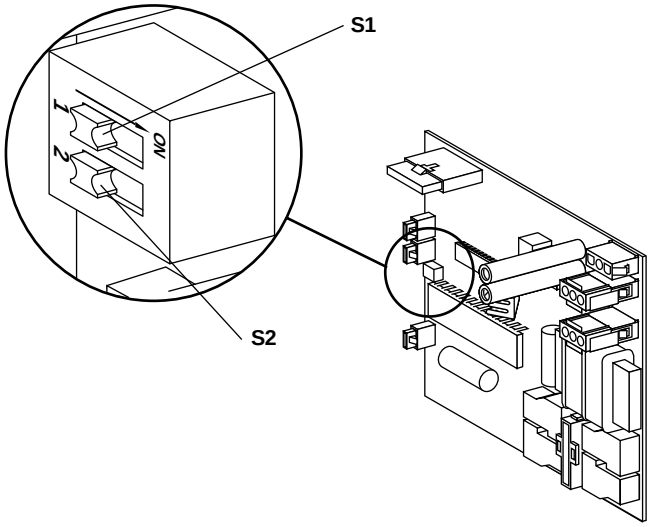


Figure 3-22B. Programming the Chair

Adjust Headrest Glidebar Tension M

Using a Phillips screwdriver, adjust the glide bar tension *(see Figure 3-23)*. Turn the screw clockwise to increase friction and hold the headrest more securely. Turn it counterclockwise to decrease friction and allow the headrest to move up and down more freely. Adjust the glide bar tension so that the headrest moves freely yet maintains it position.

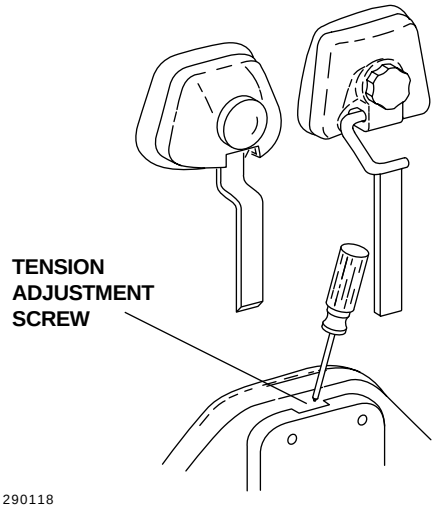


Figure 3-23. Adjusting Headrest Glidebar Tension

N Adjust Double Articulating Headrest Pivot Tension

Refer to Figure 3-24 when completing the following procedure.

Release the headrest locking lever and remove the headrest from the chair. On the side of the headrest opposite the locking lever, remove the side plate using a small Phillips screwdriver. Next, using a 3/32-inch hex key, loosen the setscrew. Using a small Phillips screwdriver, remove the bumper. Adjust the locking nut under the bumper using a flat-tipped screwdriver. Turn the nut counterclockwise to decrease pivot tension, allowing the headrest to be positioned more easily. Turn the nut clockwise to increase tension and hold the headrest more tightly. Tighten the 3/32-inch setscrew before testing the new tension setting.

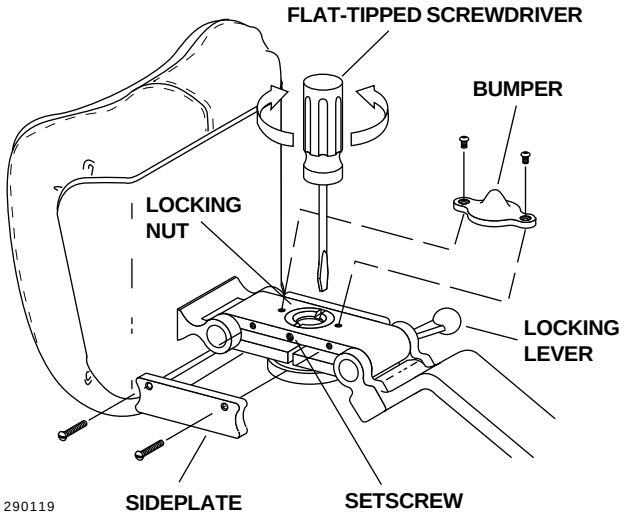


Figure 3-24. Adjusting Headrest Pivot Tension

SECTION 4

ILLUSTRATED PARTS BREAKDOWN

Service Parts Codes

Section 4, Illustrated Parts Breakdown (IPB), includes Service Parts Codes in the right hand column of every parts list (*see Figure 4-1*). Service Parts Codes help you determine what parts should be kept on hand and aid you in locating those parts when they are needed.

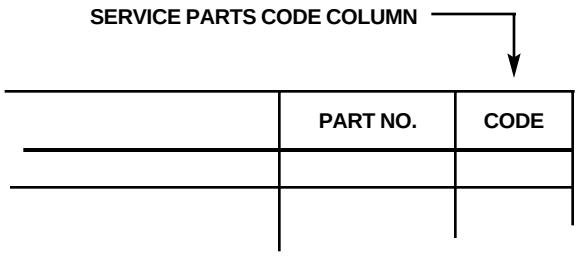


Figure 4-1. Service Parts Code Column

Service Parts Codes are defined as follows:

Code 1: Hardware Store Items

Parts designated as Code 1 are those items that can be purchased at retail hardware stores in most parts of the United States. Service delays are minimized when these parts are obtained locally. In areas where Code 1 parts are not available, they can be ordered from A-dec.

Code 2: Field Repair Kit

Code 2 parts are included in an A-dec Field Repair Kit when available. Currently a field repair kit for A-dec Models 1010/15/20 Dental Chairs is not available.

Code 3: Service Vehicle Parts Stock

Code 3 parts are items we suggest you carry in your service vehicle. A-dec does not offer a Code 3 parts kit as service requirement quantities vary in different areas. Select and stock Code 3 parts that satisfy the needs of your area.

Code 4: Dealer Shelf Stock

Code 4 parts are those that, in addition to Code 2 and 3 parts, should be stocked by the dealer.

Code 5: Factory Order

Code 5 parts are readily available from A-dec. These parts are not needed frequently enough to justify keeping them in stock at the dealer.

Code 6: Not Available for Field Replacement

Code 6 parts are **not available** (N/A) for field replacement or must be ordered as part of a larger assembly.

Figure 4-2. 1015/20 Lower Covers

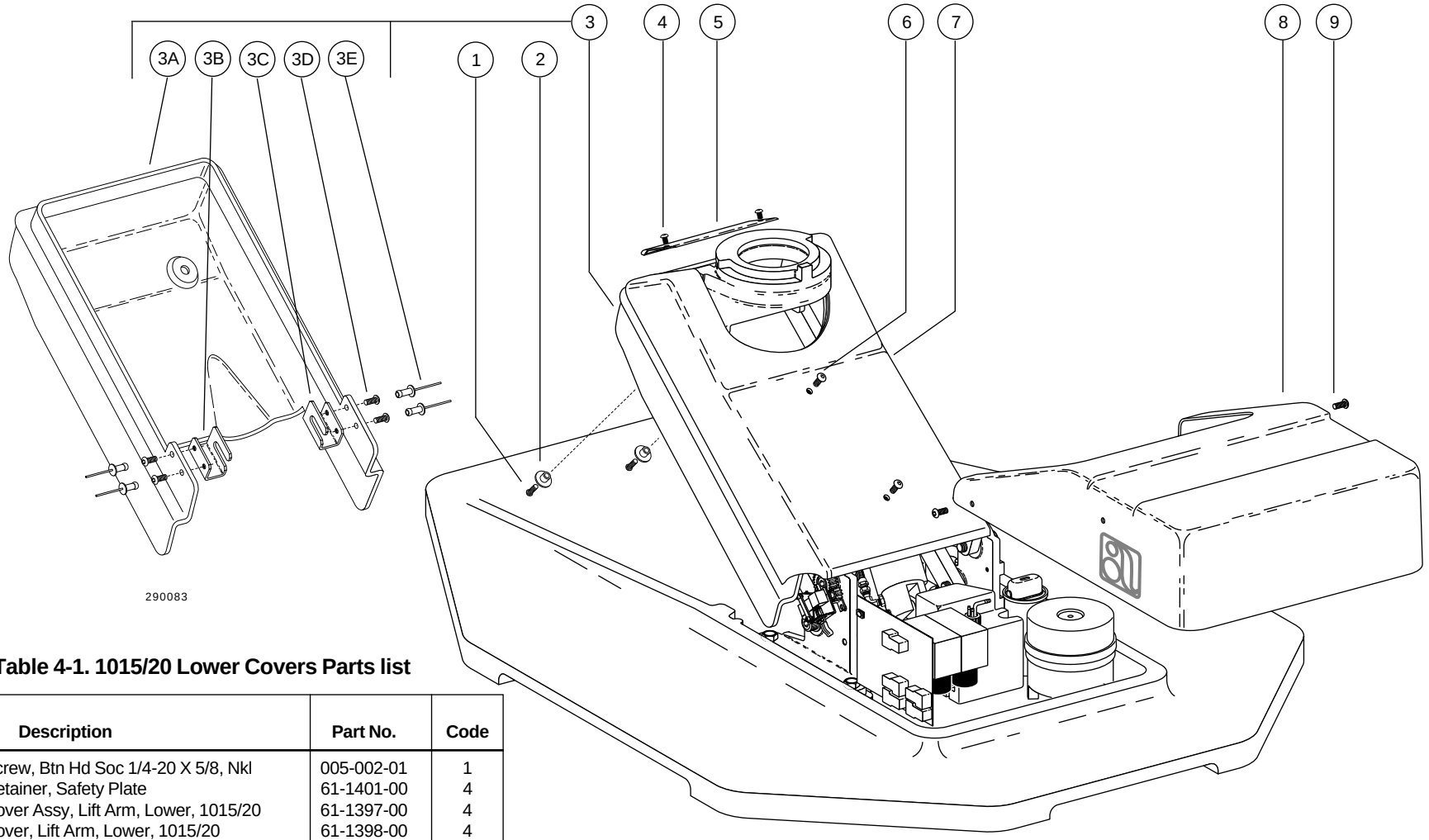


Table 4-1. 1015/20 Lower Covers Parts list

Ref. No.	Description	Part No.	Code
1	Screw, Btn Hd Soc 1/4-20 X 5/8, Nkl	005-002-01	1
2	Retainer, Safety Plate	61-1401-00	4
3	Cover Assy, Lift Arm, Lower, 1015/20	61-1397-00	4
3A	Cover, Lift Arm, Lower, 1015/20	61-1398-00	4
3B	Mounting Bracket, Lower Cover, LH	61-1400-00	5
3C	Mounting Bracket, Lower Cover, RH	61-1399-00	5
3E	Rivet, Pop, 3/16” Steel	012-011-00	4
4	Screw, Btn Hd Soc 1/4-20 X 3/8, Nkl	005-112-00	1
5	Cover, Lift Arm, Rear, 1015/20	61-1396-00	4
6	Screw, Btn Hd Soc 1/4-20 X 5/8, Nkl	005-002-01	1
7	Cover, Lift Arm, Upper, 1015/20	61-1395-00	4
8	Cover, Hydraulic Pump, Vac-Back 1015/20	61-1441-00	4
8	Cover, Hydraulic Pump	61-1204-00	4
9	Screw, Btn Hd Soc 1/4-20 X 3/8, Nkl	005-112-00	1

Figure 4-3. 1015/20 Safety Stop Bracket and Switches

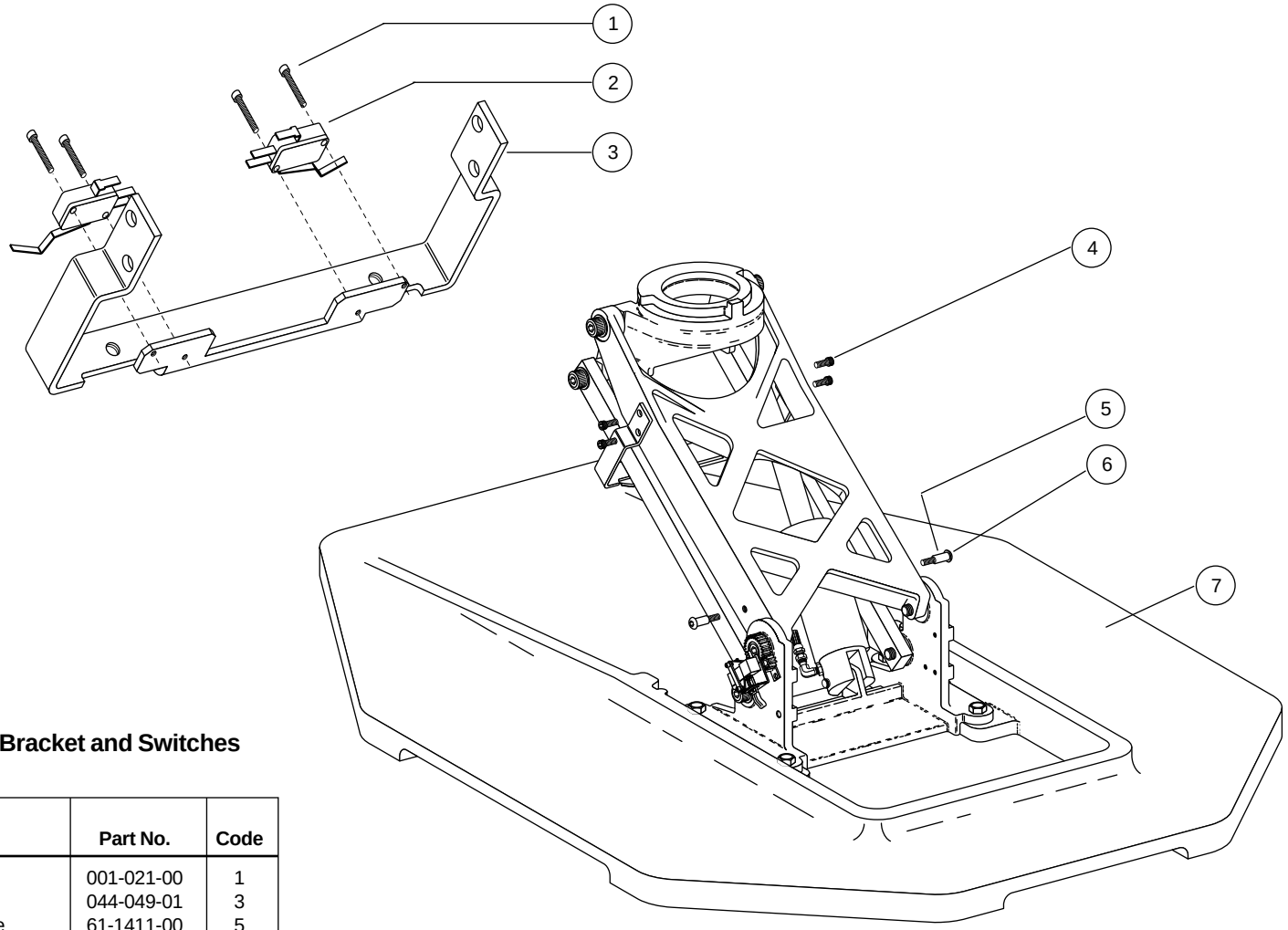


Table 4-2. 1015/20 Safety Stop Bracket and Switches Parts List

Ref. No.	Description	Part No.	Code
1	Screw, Soc Head, 4-40 X 1/2, SST	001-021-00	1
2	Limit Switch, Modified	044-049-01	3
3	Mounting Bracket, Sw, Safety Plate	61-1411-00	5
4	Screw, Soc Head, 1/4-20 X 1/2, Zinc	005-008-00	5
5	Spacer, .625 Long X .31 OD, Brass	61-1413-00	5
6	Screw, Button Head Soc, 1/4-20 X 1 Nkl	005-109-01	5
7	Baseplate, 1010/15/20 Chair, Gray	61-1275-00	5
	Baseplate, 1010/15/20 Chair, Surf #6	61-1275-01	5
	Not Shown		
	Cable Assy, Lift, Tilt, Safety Switch, 1015/20/40	61-2099-00	3
	Cable Assy, Lift, Tilt, 1010	61-1220-00	3

Figure 4-4. 1010 Lower Covers

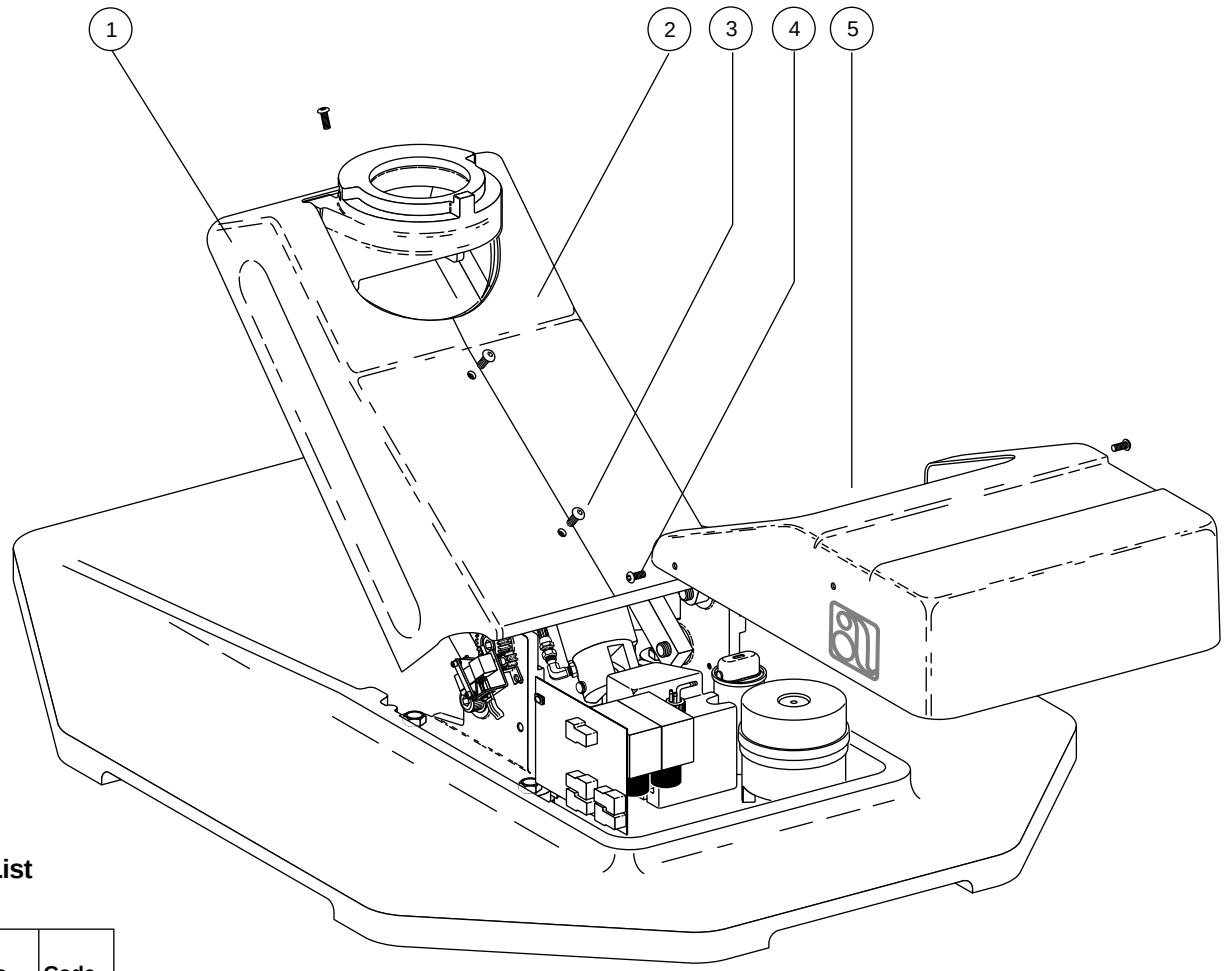


Table 4-3. 1010 Lower Covers Parts List

Ref. No.	Description	Part No.	Code
1	Cover, Lift Arm, Right, Surf	61-1206-00	4
2	Cover Assy, Lift Arm, Left, Surf	61-1205-00	4
3	Screw, Btn Hd Soc,1/4-20 X 5/8, Nkl	005-002-01	4
4	Screw, Btn Hd Soc,1/4-20 X 3/8, Nkl	005-112-00	4
5	Cover, Hydraulic Pump	61-1204-00	4

Figure 4-5. Base Positioning Potentiometer, Limit Switch and Bracket Assembly Part No. 61-1221-00

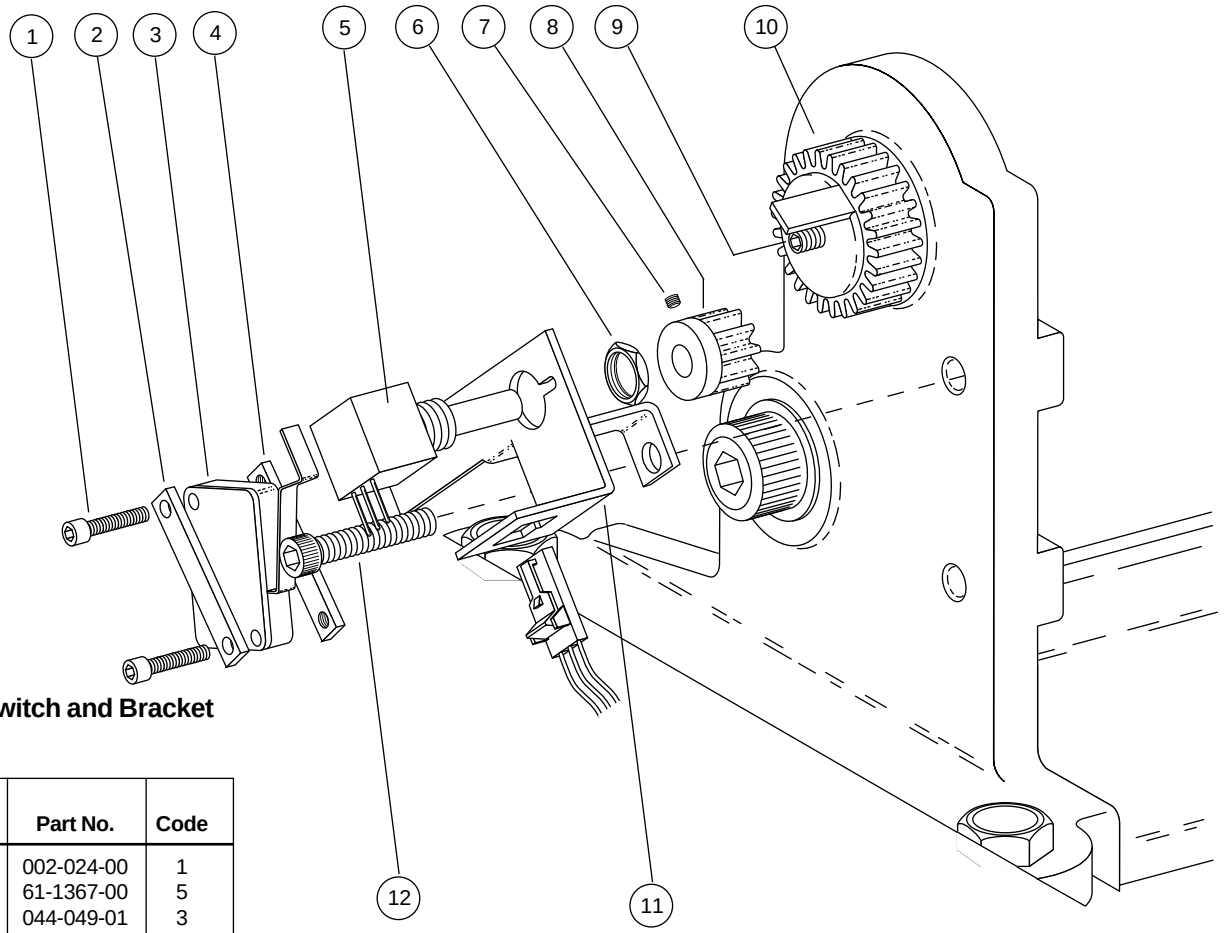


Table 4-4. Base Positioning Pot, Limit Switch and Bracket Assy Parts List

Ref. No.	Description	Part No.	Code
1	Screw, Soc Hd, 4-40 X 3/4, Zinc	002-024-00	1
2	Mounting Plate, Limit Sw, .125 Dia	61-1367-00	5
3	Limit Switch, Modified	044-049-01	3
4	Mounting Plate, Limit Sw, 4-40	60-0080-00	5
5	Potentiometer, 5K Ohm, 20%, 1W, W/Nut	041-372-00	3
6	Nut (Included with Pot)	-	
7	Set Screw, Soc Cup Pt, 4-40 x 1/8	007-010-00	5
8	Gear, 10 Tooth, 24 Pitch, .250 OD	61-1222-00	5
9	Set Screw, Soc Cup Pt, 10-32 x 5/16	007-004-00	5
10	Gear, Molded, 24 Pitch, 30 Tooth	61-1295-00	5
11	Mounting Bracket, Pot, Base Positioning	61-1223-00	5
12	Screw, Soc Hd, 1/4-20 X 1/2, Zinc	005-008-00	1
	Not Shown		
	Wire Assy, 3 Cond, 6", Chair Lift 1010/15/20/40	61-1502-00	3

Figure 4-6. 1010/15/20 Hydraulic Power Assembly

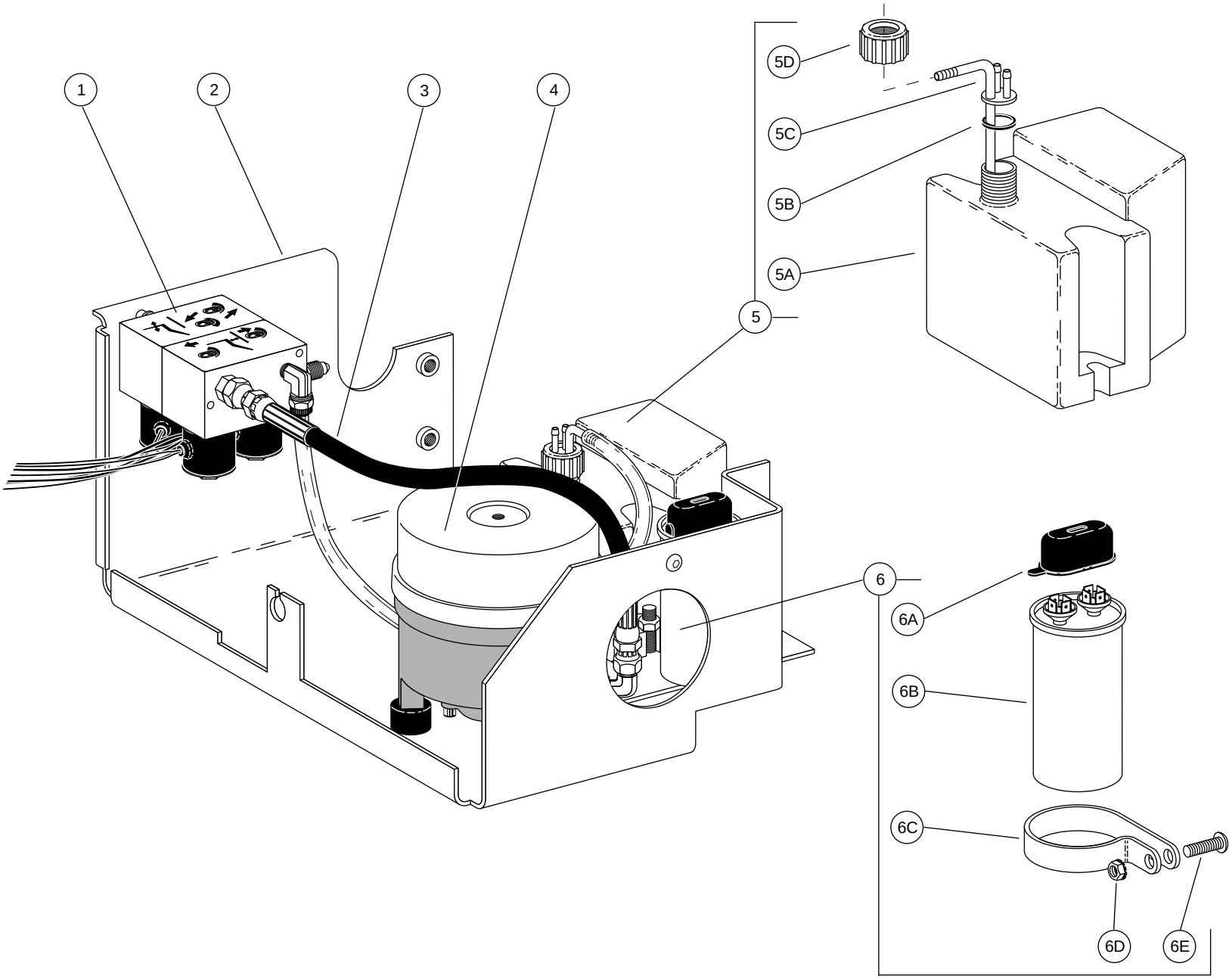


Table 4-5. 1010/15/20 Hydraulic Power Assembly Parts List

Ref. No.	Description	Part No.	Code
1	Manifold Assy, Hyd, 100V, 1010/15/20 Chair	61-1332-00	4
	Manifold Assy, Hyd, 120V, 1010/15/20 Chair	61-1333-00	4
	Manifold Assy, Hyd, 240V, 1010/15/20 Chair	61-1334-00	4
2	Mounting Tray, Hydraulic Power	61-1338-00	5
3	Hose Assy, Hyd, Str/Str Ends, 12.75 Long	61-0109-03	3
4	Motor Assy, Hyd Pump, 100V	61-1326-00	4
	Motor Assy, Hyd Pump, 115V	61-1327-00	4
	Motor Assy, Hyd Pump, 240V	61-1328-00	4
5A	Tank, Hydraulic, 1010 Chair	61-1339-00	4
5B	Washer, Flat, Buna-N, .75 ID	004-161-00	4
5C	Pick-Up Tube Assy, Hydraulic Tank	61-1489-00	4
5D	Nut, Retainer, 3/4 Garden Hose Thread	006-112-00	4
6A	Capacitor, 50 Uf, 240 VAC, 60 Hz	041-164-00	3
6B	Boot, Protective, Capacitor	041-165-00	5
6C	Clamp, Capacitor Mounting	025-058-00	5
6D	Nut, Hex, KEPS, 10-32 X 3/8 X 5/32	006-016-00	1
6E	Screw, Btn Hd Soc, 10-32 X 1/2, SST	005-110-00	1
	Not Shown		
	Tubing 3/8” OD, Hydraulic Fluid, 8” Length	036-035-00	3
	Hose Assy, Hyd, Str/Str Ends, 27.25 Lg	61-0109-02	3
	Hose Assy, Hyd, Str/90 Deg Ends, 52” Lg	61-0217-03	3
	Circuit Board Assy, 1010 Chair 120V	61-1214-01	3
	Circuit Board Assy, 1010 Chair 240V	61-1217-01	3
	Circuit Board Assy, 1010 Chair 100V	61-1373-01	3
	Fuse, 1/8 A, 250V, 3AG, Slow-Blow	041-360-00	3
	Fuse, 0.3 A, 250V, 3AG, Slow-Blow	046-069-00	3
	Wire Assy, 3 Cond, 48", Chair Back	61-1503-00	3
	Cable Assy, Lift & Tilt Limit Switches, Sankin	61-1366-00	3
	Air Elec Sw/Cable Assy, 1010, Sankin	61-1384-00	3

Figure 4-7. Hydraulic Manifold/Solenoid Assembly

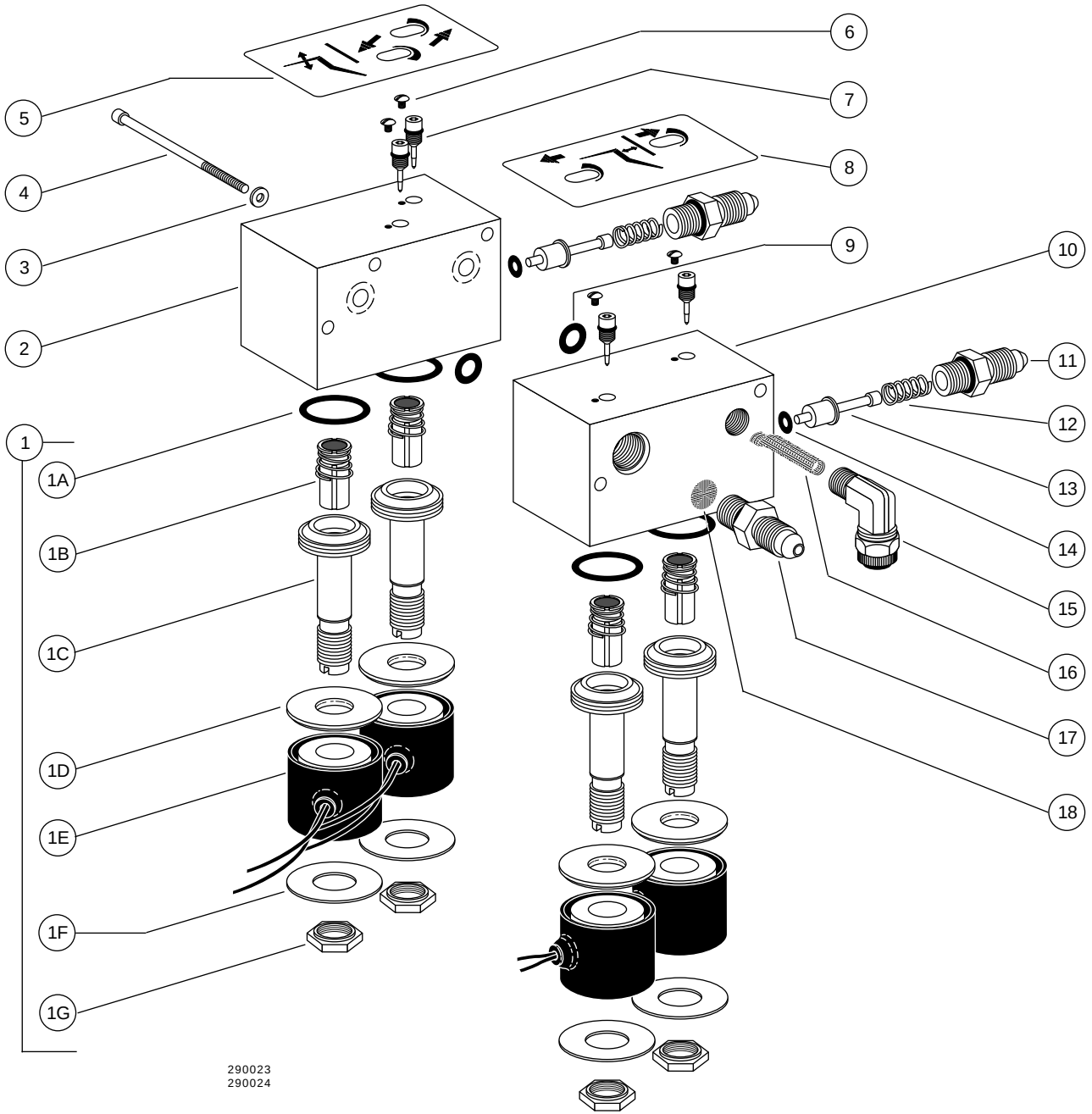


Table 4-6. Hydraulic Manifold/Solenoid Assembly Parts List

Ref. No.	Description	Part No.	Code
1	Solenoid, 8 Watt, 100V	61-1335-00	3
	Solenoid, 8 Watt, 120V	61-1336-00	3
	Solenoid, 8 Watt, 240V	61-1337-00	3
1A	O-Ring, AS568-016, .614 ID X .070 W	030-016-00	3
1B	Plunger and Spring, Solenoid	-	6
1C	Plunger Guide, Solenoid	-	6
1D	Washer, Solenoid	-	6
1E	Solenoid	-	6
1F	Nameplate, Solenoid	-	6
1G	Nut, Solenoid	-	6
2	Manifold, Tilt	-	6
3	Washer, Flat, STL PL, .156 ID	004-012-00	3
4	Screw, Soc Hd, 6-32 X 1-3/4, Blk	002-101-00	1
5	Decal, Speed Adj., Tilt	055-122-00	5
6	Screw, Tr Hd Slot, 2-56 X 1/8 SST	001-002-00	5
7	Screw, Flow Adjust, 10-56	61-0460-00	3
8	Decal, Speed Adj., Lift	055-121-00	5
9	O-Ring, AS568-010, .239 ID X .070 W	030-010-00	3
10	Manifold, Lift	-	6
11	Ftg W/O-Ring, JIC, 37 Deg Str Thrd	022-049-00	4
12	Spring, Helical, Comp, .250 OD X .40	013-044-00	4
13	Stem W/O-Ring, Check Valve	61-0461-00	4
14	O-Ring, AS568-004, .070 ID X .070 W	030-004-00	3
15	Elbow, 3/8 Poly X 1/8 MPT	022-025-00	4
16	Screen, Manifold Inlet	61-0464-00	3
17	Ftg W/O-Ring, JIC, 37 Deg Str Thrd	022-049-00	4
18	Screen, Manifold Outlet	61-0465-00	3

Figure 4-8. Base Lift and Back Tilt Hydraulic Cylinders

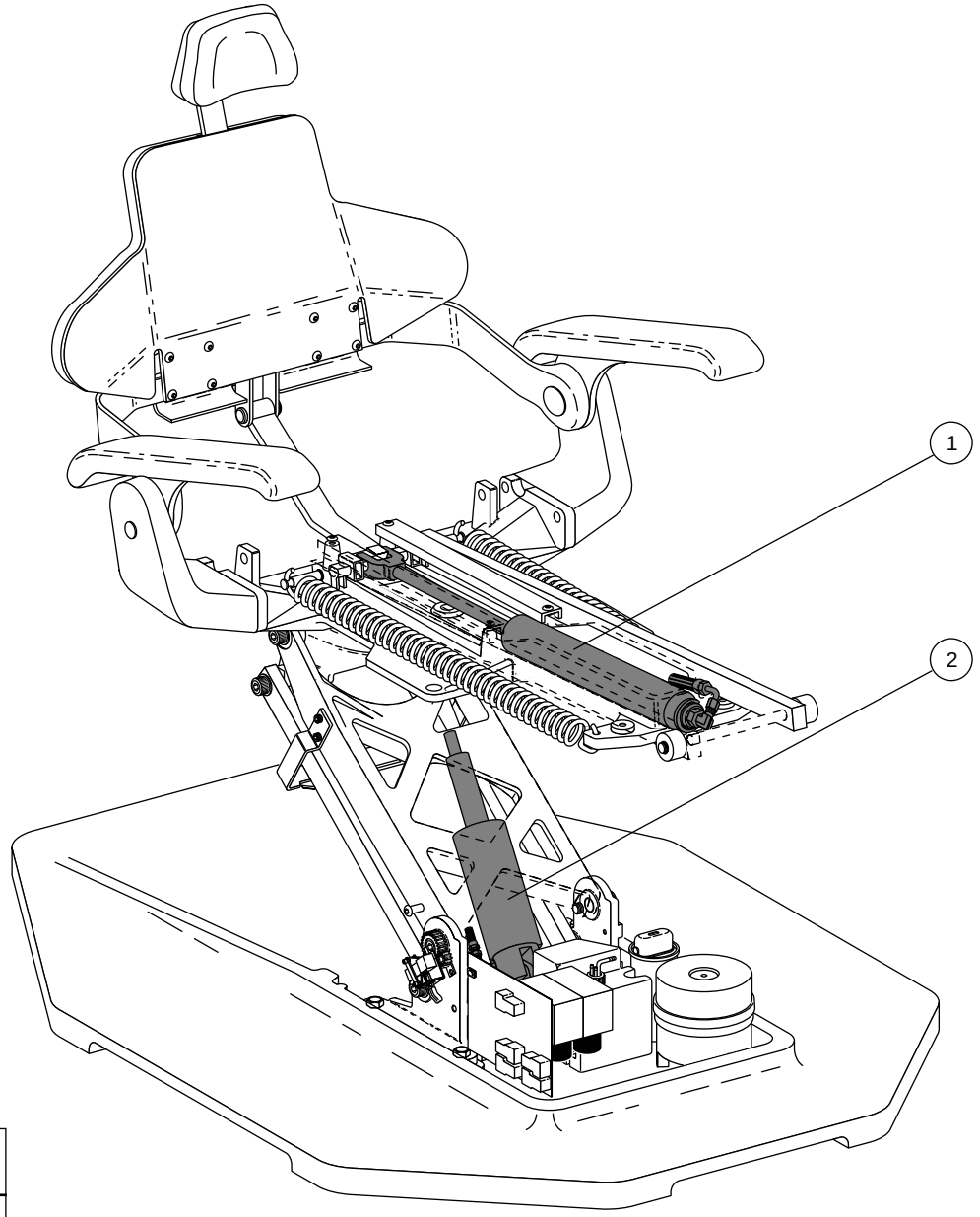


Table 4-7. Base Lift and Back Tilt Hydraulic Cylinders Parts List

Ref. No.	Description	Part No.	Code
1	Tilt Cylinder Assembly	61-1267-00	3
2	Lift Cylinder Assembly	61-1287-00	3

Figure 4-9. Back Cover and Armrests

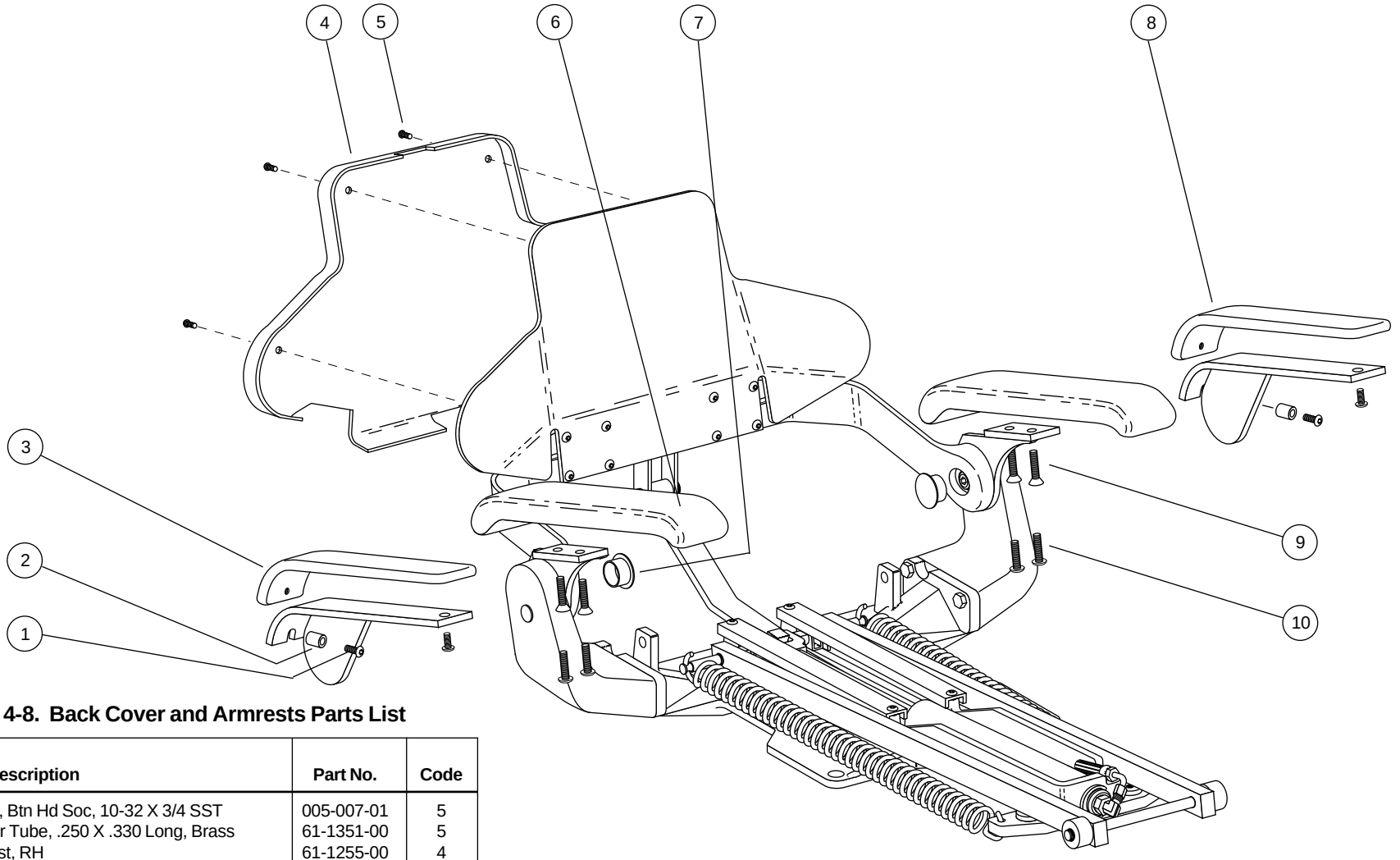


Table 4-8. Back Cover and Armrests Parts List

Ref. No.	Description	Part No.	Code
1	Screw, Btn Hd Soc, 10-32 X 3/4 SST	005-007-01	5
2	Spacer Tube, .250 X .330 Long, Brass	61-1351-00	5
3	Armrest, RH	61-1255-00	4
4	Cover, Backrest, Surf	61-1202-00	4
	Cover, Backrest, Vac-Back Surf 1015/20	61-1438-00	4
5	Screw, Btn Hd Soc, 10-32 X 1" NKL	005-124-00	1
6	Armrest, Molded, Surf, 1015/20	61-1404-00	4
7	Plug Hole, 1-1/4 Dia., Surf	018-010-01	5
8	Armrest, LH	61-1253-00	4
9	Screw, Flat Hd Soc, 1/4-20 X 1/2 Nkl	002-085-01	1
10	Screw, Btn Hd Soc 1/4-20 X 5/8 Nkl	005-002-01	1

Figure 4-10. Upper Structure

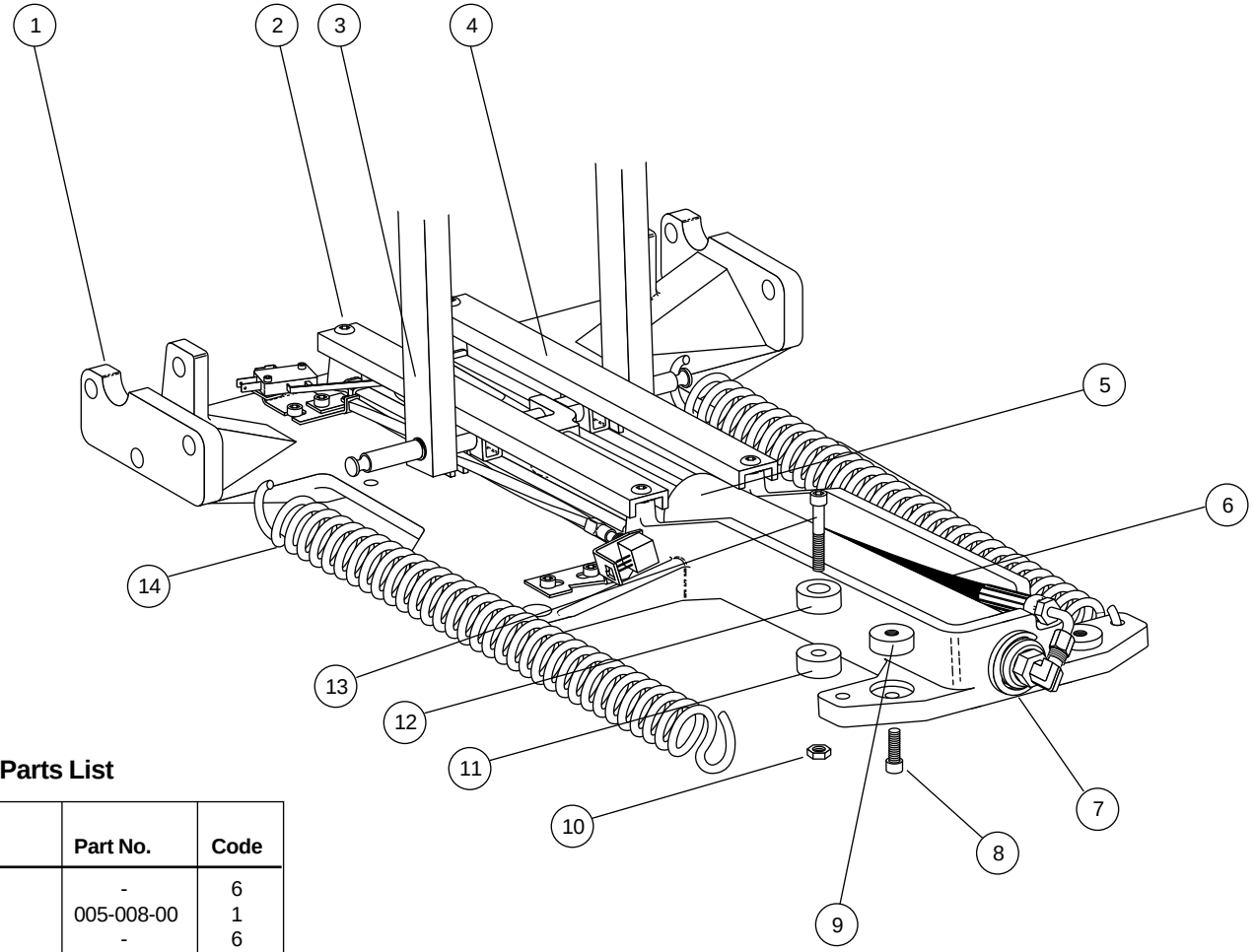


Table 4-9. Upper Structure Parts List

Ref. No.	Description	Part No.	Code
1	Frame, Upper Structure	-	6
2	Screw, Soc Hd, 1/4-20 X 1/2, Zinc	005-008-00	1
3	Link Arm, Roller, Toeboard	-	6
4	Channel, Guide, Slide Block	-	6
5	Tilt Cylinder Assy	61-1267-00	3
6	Hose Assy, Hyd, Str/90 Deg Ends, 52" Lg	61-0217-03	3
7	Retaining Ring, Ext, E-Ring, 1.00 Dia	010-051-00	1
8	Screw, Soc Hd, 1/4-20 X 3/4, Zinc	002-080-00	1
9	Pad, Wear, Link Arm	61-1314-00	5
10	Nut, Hex, 1/4-20 X 7/16 X 3/16, Stl	006-023-00	1
11	Tilt, Spacer	F84-705	3
12	Pad, Wear, Link Arm	F84-706	5
13	Screw, Soc Hd, 1/4-20 X 1 3/4, Zinc	002-050-00	1
14	Spring, Helical, Ext, 1.25 OD X11.0 Lg	013-054-00	5

Figure 4-11. Back Positioning Potentiometer, Limit Switch and Bracket Assembly

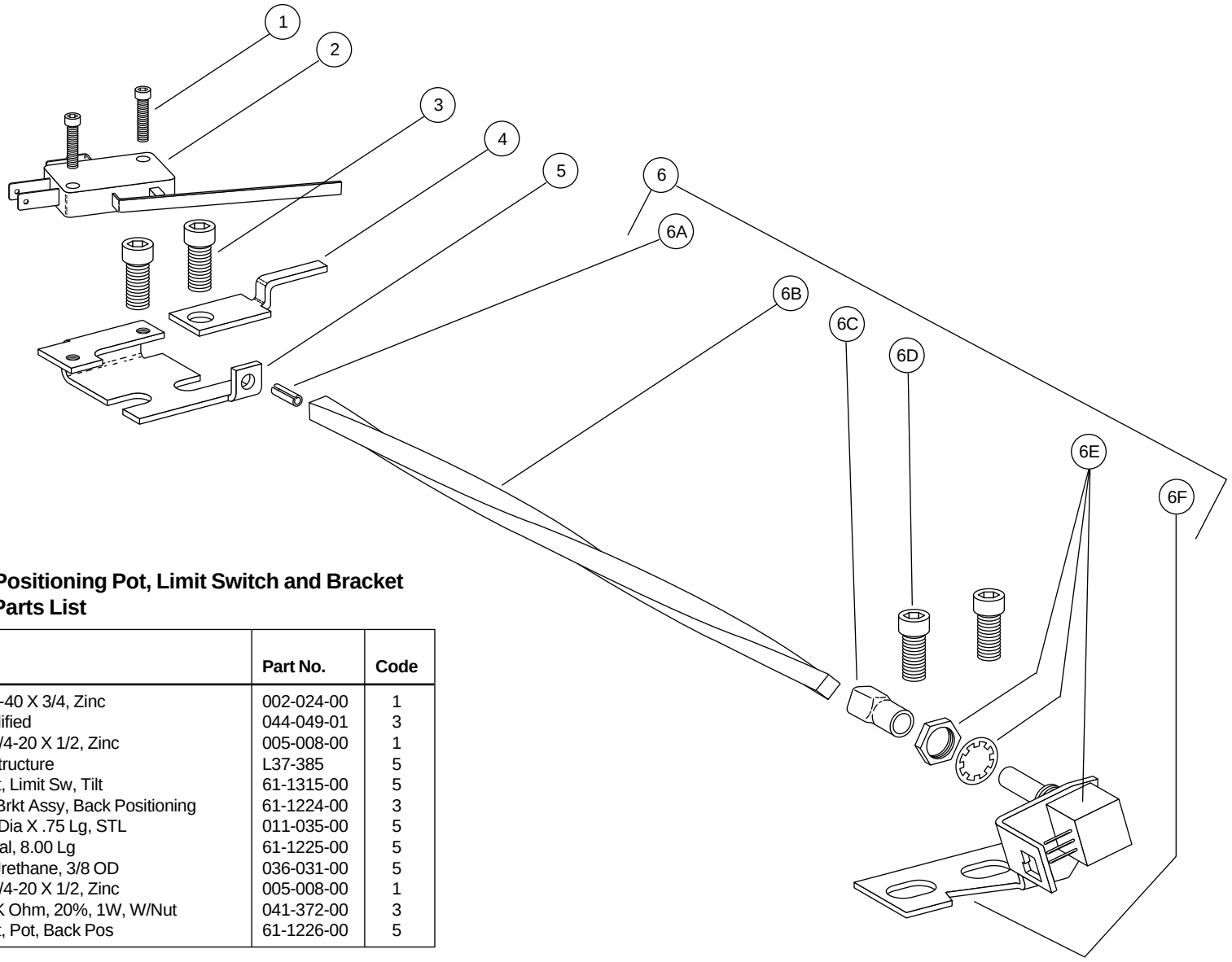


Table 4-10. Back Positioning Pot, Limit Switch and Bracket Assy Parts List

Ref. No.	Description	Part No.	Code
1	Screw, Soc Hd, 4-40 X 3/4, Zinc	002-024-00	1
2	Limit Switch, Modified	044-049-01	3
3	Screw, Soc Hd, 1/4-20 X 1/2, Zinc	005-008-00	1
4	Bracket, Upper Structure	L37-385	5
5	Mounting Bracket, Limit Sw, Tilt	61-1315-00	5
6	Potentiometer & Brkt Assy, Back Positioning	61-1224-00	3
6A	Pin, Spring, .125 Dia X .75 Lg, STL	011-035-00	5
6B	Drive Shaft, Helical, 8.00 Lg	61-1225-00	5
6C	Tubing, Yellow, Urethane, 3/8 OD	036-031-00	5
6D	Screw, Soc Hd, 1/4-20 X 1/2, Zinc	005-008-00	1
6E	Potentiometer, 5K Ohm, 20%, 1W, W/Nut	041-372-00	3
6F	Mounting Bracket, Pot, Back Pos	61-1226-00	5

Figure 4-12. Headrest Glidebar Brake Assemblies

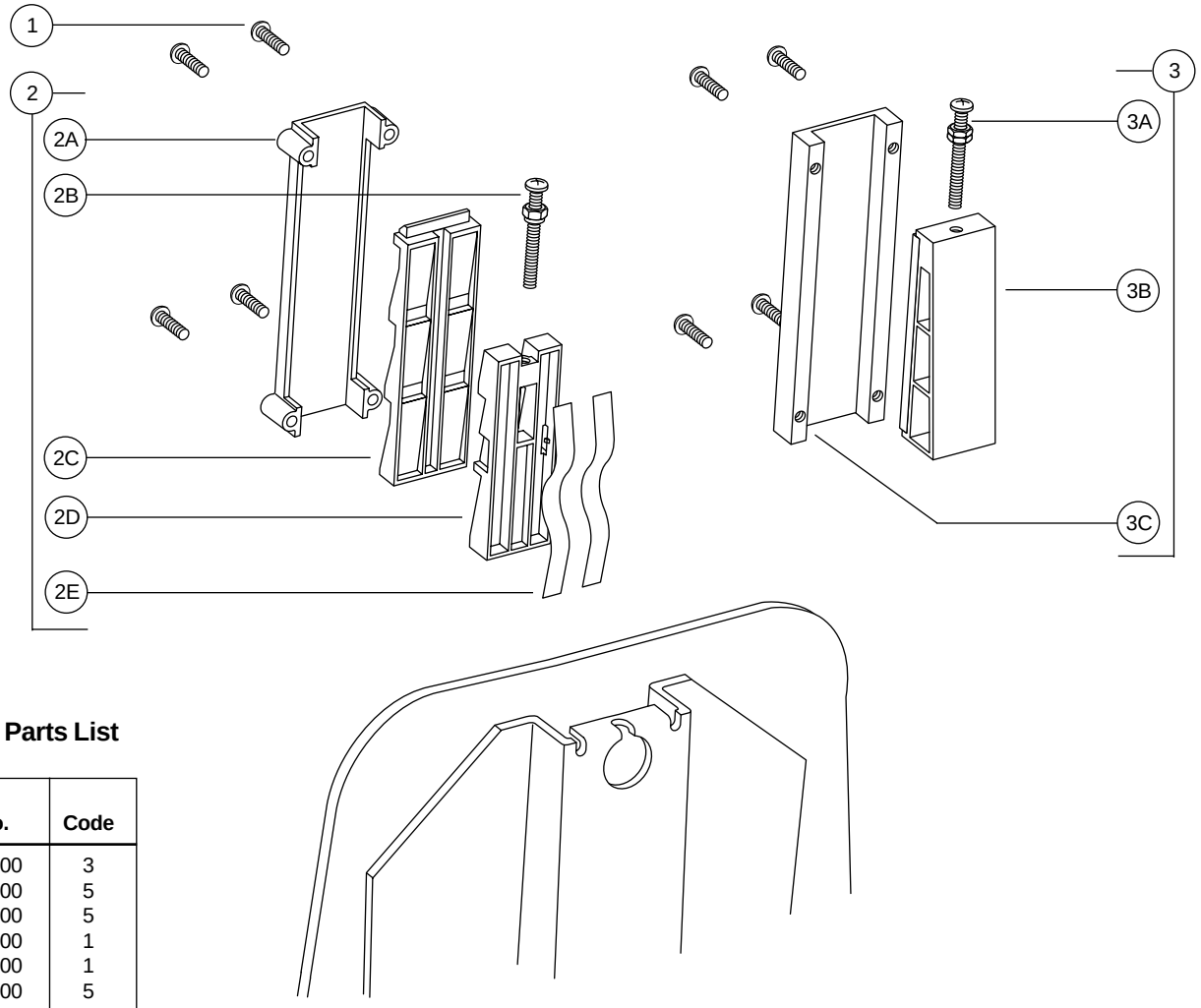


Table 4-11. Headrest Glidebar Brake Assemblies Parts List

Ref. No.	Description	Part No.	Code
1	Screw, Btn Hd Soc, 10-32 X 1/2, SST	005-110-00	3
2	Sliding Wedge Assy, Glide Bar, 1010	61-1570-00	5
2A	Guide Block, Headrest, Molded	61-1568-00	5
2B	Nut, Hex, 10-32 X 3/8 X 1/8 STL	006-081-00	1
2B	Screw, Pan Hd Phil, 10-32 X 1-3/4”	001-161-00	1
2C	Wear Pad, Sliding Wedge, Molded	61-1569-00	5
2D	Sliding Wedge, Tension Adjust Molded	61-1572-00	5
2E	Spring, Headrest Tension, Molded	61-1571-00	5
3	Headrest Glidebar Brake Assembly	-	6
3A	Nut, Hex, 10-32 X 3/8 X 1/8 STL	006-002-00	1
3A	Screw, Pan Hd Phil, 10-32 X 1-3/4”	001-161-00	1
3B	Sliding Wedge Assy	-	6
3C	Guide Block, Glide Bar, Headrest	-	6

Figure 4-13. Vac Back Manifold and Pivot Arm Leveling Assembly

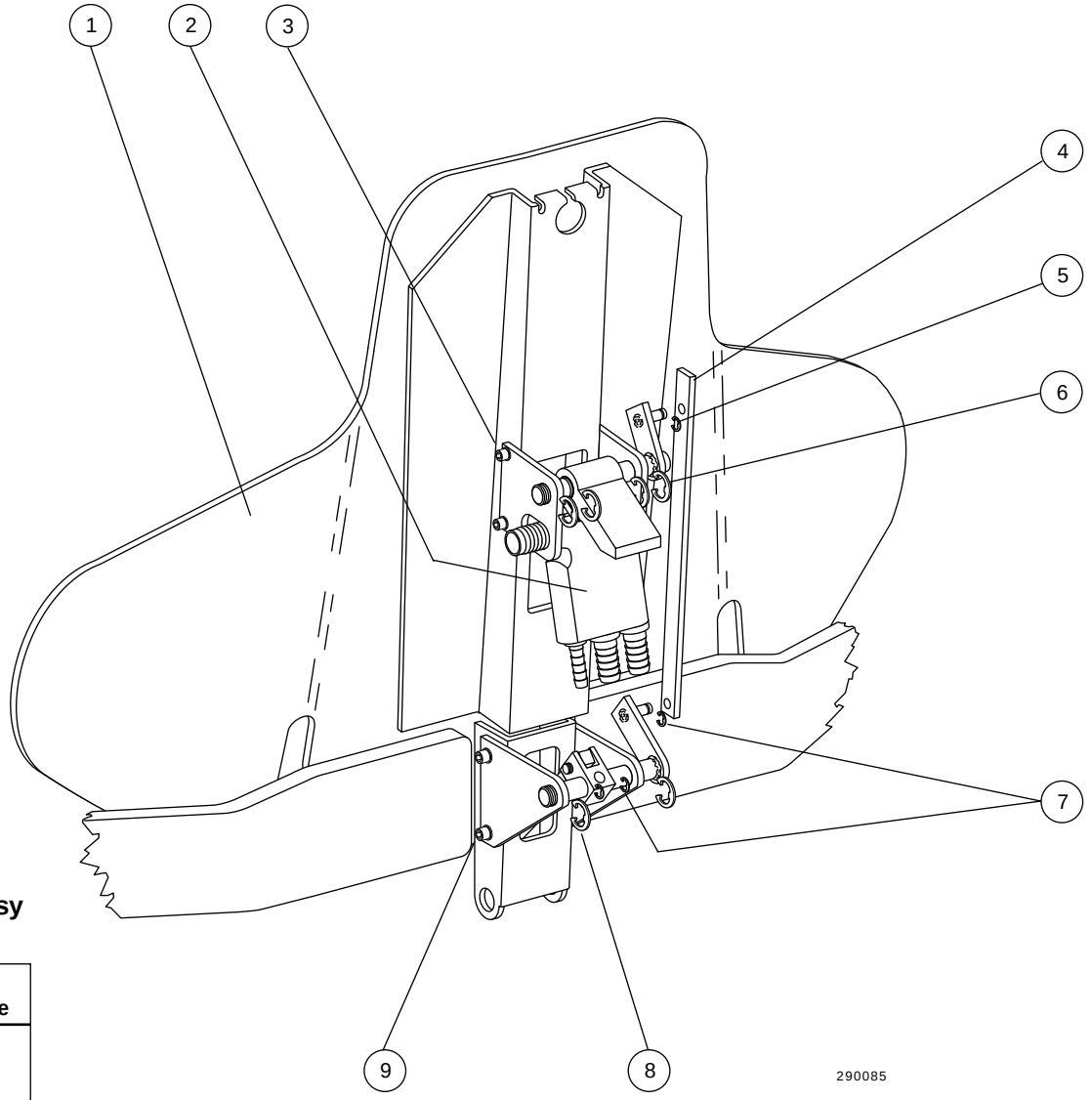


Table 4-12. Vac Back Manifold and Pivot Arm Leveling Assy Parts List

Ref. No.	Description	Part No.	Code
1	Weldment, Backrest 1010/1015 Chair	-	6
	Weldment, Backrest, Vac-Back, 1015	-	6
2	Manifold Assy, Vac-Back, PE	61-1022-00	3
3	Screw, Soc Hd, 10-32 X 3/8, Zinc	001-016-00	5
4	Link, Pivot Arm, Vac-Back, 1015	61-1448-00	1
5, 7	Retaining Ring, External E-Ring.25 Dia	010-053-00	1
6, 8	Retaining E-Ring, External, 1/2" ID	010-031-00	1
9	Screw, Soc Hd, 1/4-20 X 3/4, Zinc	002-080-00	1

Figure 4-14. Vac Back Cover and Pivot Arm Assembly

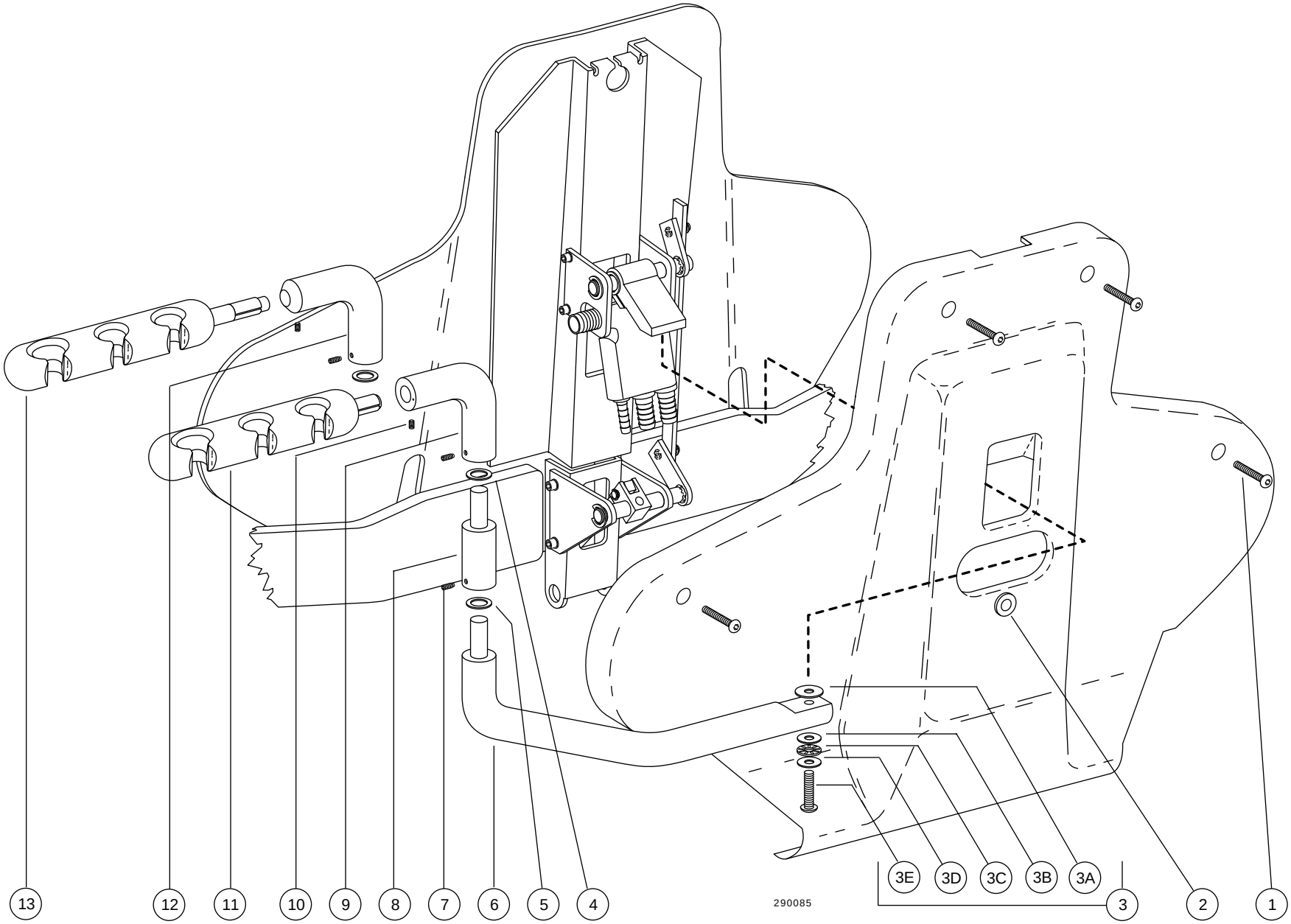


Table 4-13. Vac Back Cover and Pivot Arm Assembly Parts List

Ref. No.	Description	Part No.	Code
1	Screw, Btn Hd Soc, 10-32 X 1" NKL	005-124-00	1
2	Grommet, 3/8 ID X 3/16 Groove Wide	018-040-00	5
3A	Washer, Flat, Nylon, .252 ID	004-139-00	5
3B	Race, Thrust .252 ID	016-053-00	5
3C	Bearing, Thrust Needle, .252 ID	016-054-00	5
3D	Race, Thrust .252 ID	016-053-00	5
3E	Screw, Btn Hd Soc, 1/4-20 X 1 NKL	005-109-01	5
	Screw, Btn Hd Soc, 1/4-20 X 1 Zinc	005-109-00	1
4	Washer, Flat, Nylon, .252 ID	004-139-00	1
5	Washer, Flat, Nylon, .503 ID	004-140-00	5
6	1" Dia Arm Assy, Vac-Back, Crm Pnt	-	6
7	Set Screw, Soc Nylon Pt, 10-32 X 1/4	007-043-00	5
8	Extension Assy, 2" Vac-Back, Crm Pnt	61-0953-01	5
9	Arm Mt W/Align Mark, Vac-Back, Crm	61-1532-00	5
10	Set Screw, Soc Oval Pt, 10-32 X 5/16	007-047-00	5
11	Holder Bar Assy, 3 Pos IC	61-1535-00	5
12	Pivot Arm Mount, Vac-Back Crm Paint	61-0925-01	5
13	Holder Bar Assy, 3 Position, IC	61-1535-00	5
	Holder Bar, Artc, IC, 1.75 Lg (4 Pos)	12-0843-00	5

Figure 4-15. Swivel Brake Assembly

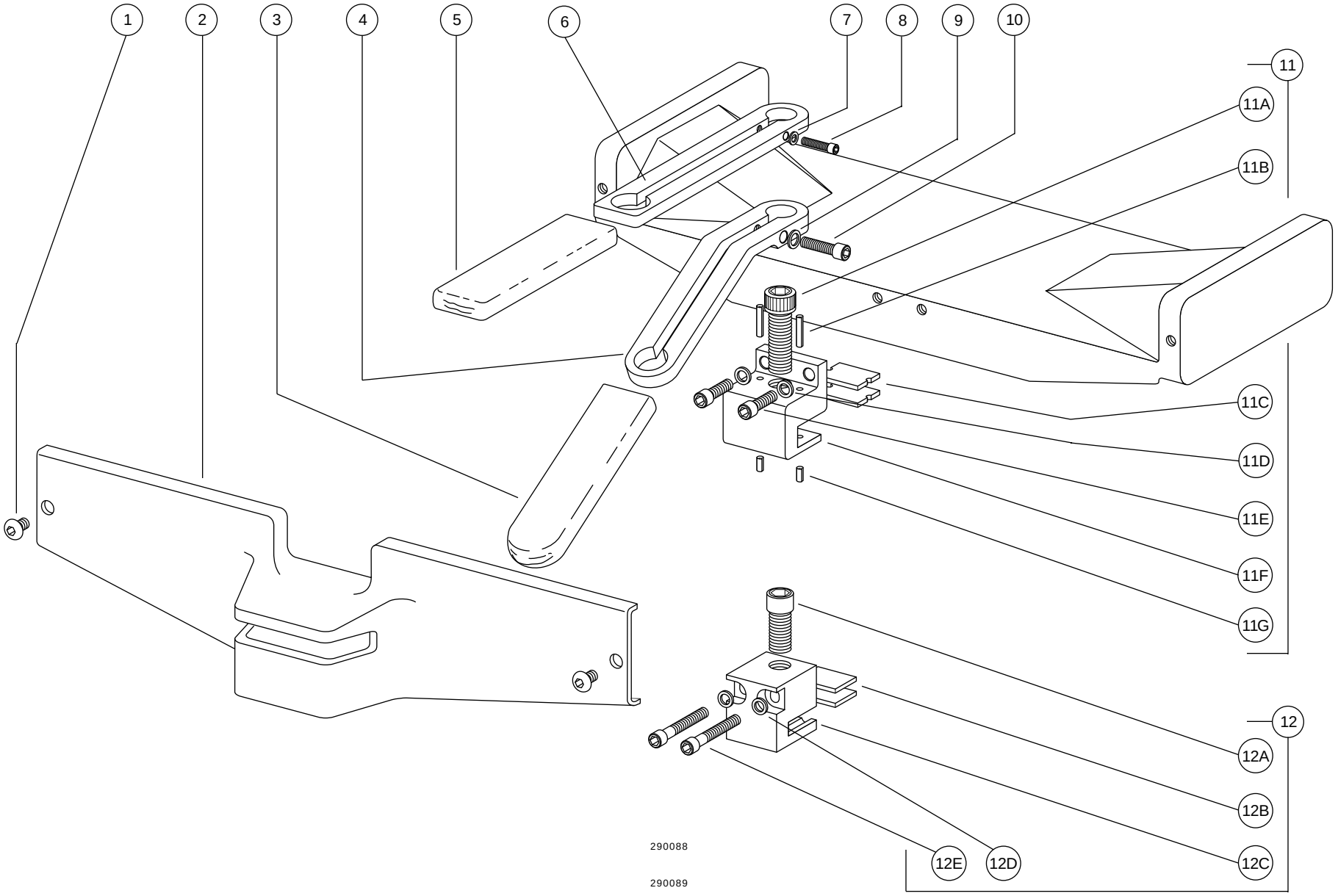


Table 4-14. Swivel Brake Assembly Parts List

Ref. No.	Description	Part No.	Code
1	Screw, Btn Hd Soc, 1/4-20 X 3/8 Nkl	005-112-00	1
2	Cover, Back, Lower, Surf	61-1542-00	4
3	Grip, Vinyl, White, 3/8 X 1-1/8 X 4	61-1525-00	4
4	Brk Handle, Vac-Back 1015 Chr 3/8 Thk	61-1541-00	5
	Brake Handle, 1010 Chair	61-1346-00	4
5	Grip, Vinyl, White, 3/8 X 1-1/8 X 4	61-1525-00	5
6	Brake Handle, 1010 Chair, 3/8 Thk	61-1540-00	5
	Brake Handle, Bent, Vac-Back, 1015	61-1483-00	5
7	Washer, Flat, STL PL, .219 ID	004-165-00	5
8	Screw, Soc Hd, 10-32 X 1, Zinc	002-039-00	1
9	Washer, Flat, STL PL, .219 ID	004-165-00	5
10	Screw, Soc Hd, 10-32 X 1, Zinc	002-039-00	1
11	Brake Assy, 1010/15/20 Chair	61-1538-00	4
11A	Screw, Soc Hd 1/2-13 X 1-1/4 Zinc	001-177-00	5
11B	Pin, Spring, .125 Dia. X .56 Lg, STL	011-092-00	5
11C	Brake Pad 1.00 X .600 X .125 Thk	61-1537-00	5
11D	Washer, Flat, STL PL, .219 ID	004-165-00	5
11E	Screw, Soc Hd, 10-32 X 1, Zinc	002-039-00	1
11F	Brake Caliper 1010/1015 Chair	61-1536-00	5
11G	Pin, Spring, .125 Dia. X .313 Lg, STL	011-091-00	5
12	Brake Assy, 1010/15 Chair	-	6
12A	Screw, Soc Hd Special, 1/2-13 X 1 1/4	-	6
12B	Brake Pad, 1.00 X .750 X .125 Thick	-	6
12C	Brake Caliper	-	6
12D	Washer, Flat, STL PL, .219 ID	-	6
12E	Screw, Soc Hd, 1/4-20 X 1/2 Cad Plated	-	6

Figure 4-16. Toeboard and Seat Assembly

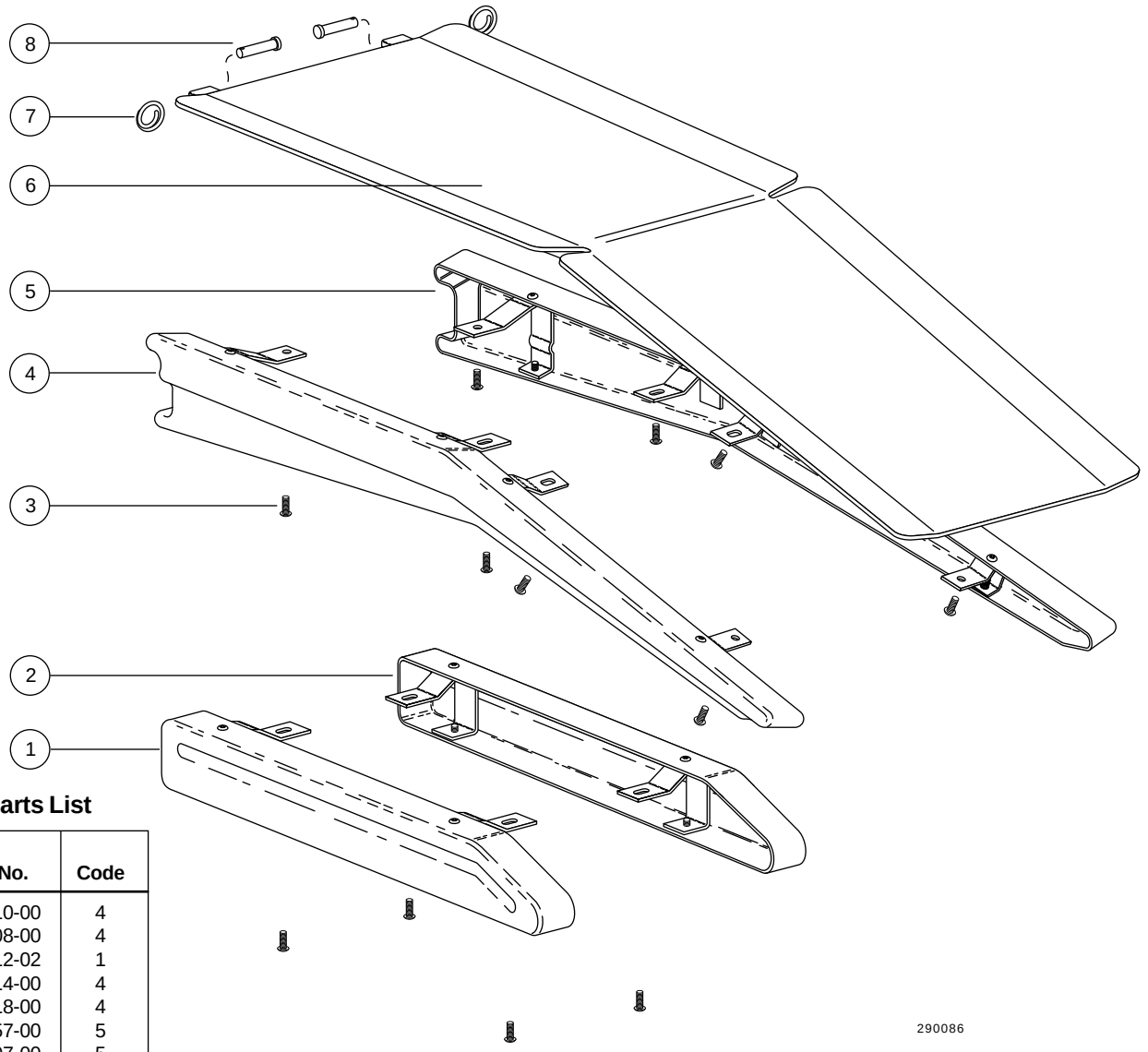


Table 4-15. Toeboard and Seat Assembly Parts List

Ref. No.	Description	Part No.	Code
1	Cover Assy, Seat & Toeboard, RH, Surf 1010	61-1210-00	4
2	Cover Assy, Seat & Toeboard, LH, Surf 1010	61-1208-00	4
3	Screw, Btn Head Soc, 10-32 X 3/8, Zinc	005-012-02	1
4	Cover Assy, Seat & Toeboard, RH, 1015	61-1414-00	4
5	Cover Assy, Seat & Toeboard, LH, 1015	61-1418-00	4
6	Seat & Toeboard Assy, 1010 Chair	61-1257-00	5
	Seat & Toeboard Assy, 1020 Chair	61-1607-00	5
7	Retaining Ring, Circle Cotter, 3/8 Dia	010-050-00	5
8	Pin, Clevis, .375 Dia X 1.88 Lg STL	011-087-00	5

Figure 4-17. Standard Articulating Headrests

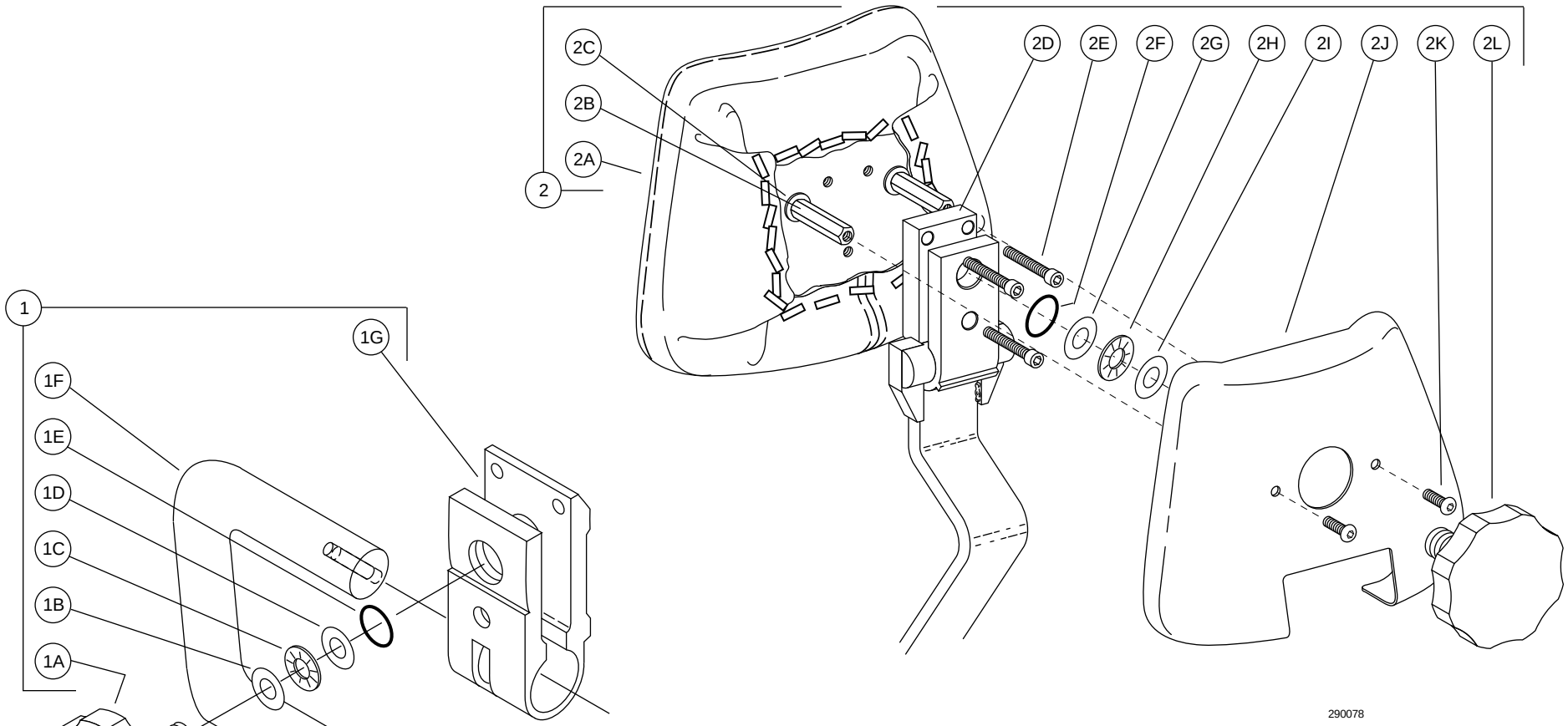


Table 4-17. Standard Articulating Headrest Parts List

Ref. No.	Description	Part No.	Code
1	Headrest Assy, Articulating, Surf	61-1227-00	5
1A	Knob, Locking, Headrest	61-1232-00	4
1B	Washer, Thrust, Bearing, .500 ID	004-136-00	5
1C	Bearing, Thrust Needle, .500 ID	016-033-00	5
1D	Washer, Thrust, Bearing, .500 ID	004-136-00	5
1E	O-Ring, AS568-012, .364 ID X .070 W	030-012-00	4
1F	Weldment, Glidebar, 1010/15/20	61-1509-00	5
1G	Pivot Block, Artic, Headrest, 1010/15/20	61-1512-00	5
	Not Shown		
	Cover, Back, Headrest	61-1228-00	4

Ref. No.	Description	Part No.	Code
2	Headrest Assy, Articulating, Surf	61-1227-00	5
2A	Headrest Upholstery (specify color)	61-xxxx-xx	5
2B	Stand-off, 5/16 Hex 1 1/8 Lg, 10-32 St	037-018-00	5
2C	Washer, Flat, Brass, .200 ID	004-015-00	5
2D	Pivot Block, Artc, Headrest	61-1512-00	5
2E	Screw, Soc Hd, 10-32 X 3/4, Zinc	002-073-00	1
2F	O-Ring, AS568-012, .364 ID X .070 W	030-012-00	4
2G	Washer, Thrust, Bearing, .500 ID	004-136-00	5
2H	Bearing, Thrust Needle, .500 ID	016-033-00	5
2I	Washer, Thrust, Bearing, .500 ID	004-136-00	5
2J	Cover, Headrest, 1010/1015	61-1513-00	4
2K	Screw, Btn Head Soc, 10-32 X 1/2, SST	005-110-00	1
2L	Knob, Locking, Headrest	61-1232-00	4

Figure 4-18. Double Articulating Headrest
Part No. 61-0814-02 (Surf)

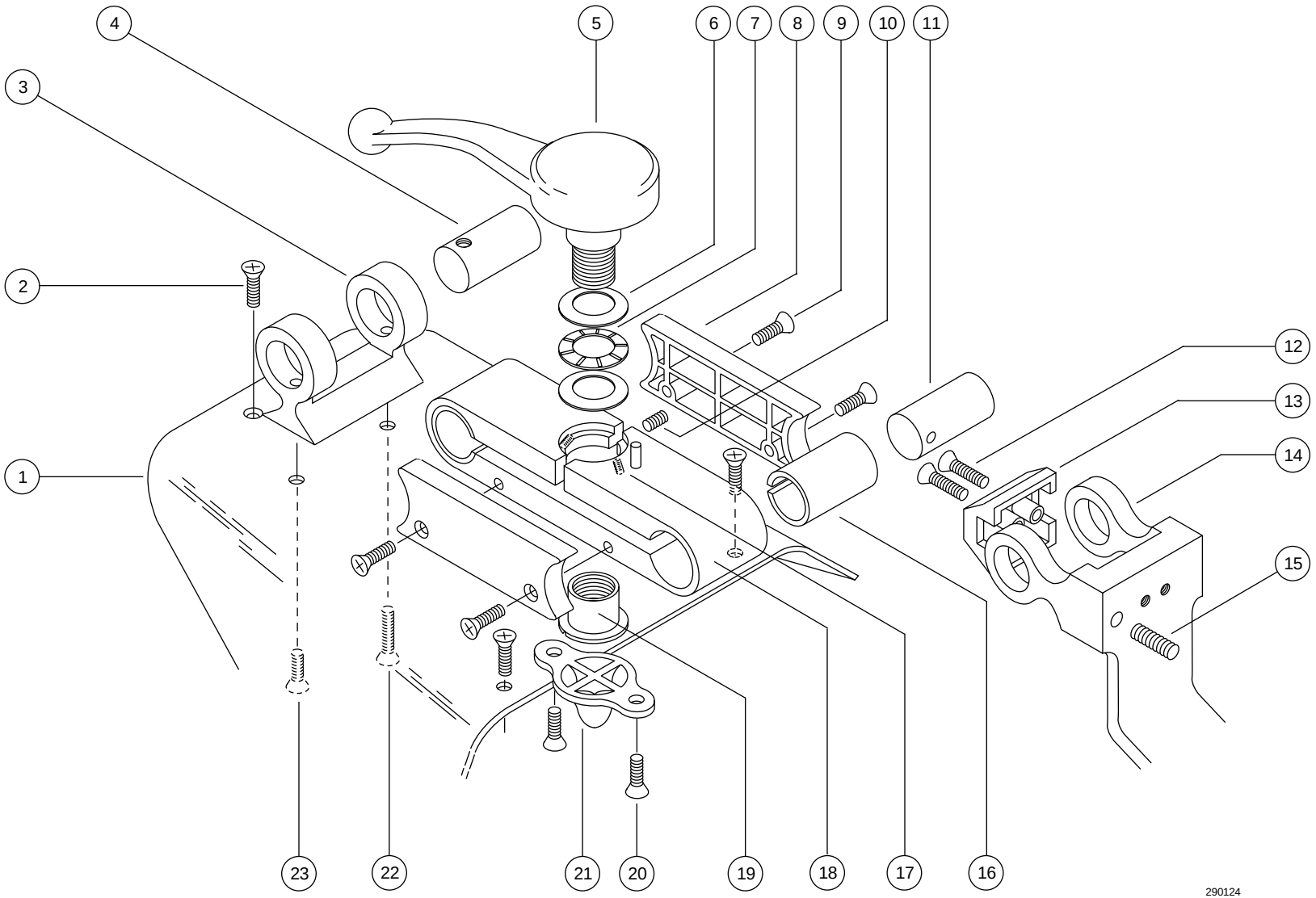


Table 4-18. Double Articulating Headrest Parts List

Ref. No.	Description	Part No.	Code
1	Headrest Cover, Dbl Artc Hr, Surf	61-0829-02	5
2	Screw,Pan Hd Phil,6-32 X 1 1/2,Zinc	005-062-00	1
3	Headrest Yoke, Surf	61-0817-02	5
4	Pivot Shaft, Upper, Headrest, Crm.	61-0822-01	5
5	Handle, Dbl Artic Headrest, Surf	61-1553-00	4
6	Washer, Thrust, Bearing, .500 ID	004-136-00	5
7	Bearing, Thrust Needle, .500 ID	016-033-00	5
8	Side Plate, Headrest Body, Surf	61-0827-02	5
9	Screw, Fl Hd Phil, 4-40 X 1/2, Nkl	002-114-00	1
10	Set Screw, Soc Cup Pt, 10-32 X 3/16	007-003-00	1
11	Pivot Shaft, Lower, Headrest, Crm.	61-0830-01	5
12	Screw, Fl Hd Soc, 10-32 X 1/2, Zinc	002-089-00	1
13	Bumper, Headrest Slide Bar, Surf	61-0826-02	3
14	Slide Bar Dbl Artc Hr, Plate	61-0818-02	5
15	Set Screw, Cup Pt, 1/4-20 X 1 1/4	007-049-00	1
16	Bushing, Modified, Headrest	61-0816-00	5
17	Set Screw, Flat Pt, 6-32 X 3/8 Blk	007-052-00	1
18	Body, Dbl Articulated Hr, Surf	61-0815-02	5
19	Locking Nut,Headrest, 1/2-10 Thd	61-1551-00	5
20	Screw, Fl Hd Phil, 4-40 X 1/4, Nkl	002-113-00	1
21	Bumper, Headrest Body, Surf	61-0828-02	3
22	Screw,Fl Hd Phil,6-32 X 3/4, Blk Ox	005-053-00	5
23	Screw, Fl Hd Soc, 10-32 X 1, Zinc	001-013-00	1
	Not Shown		
	Upholstery, Contour Hr, Dbl Artic.	61-0785-00	5
	Upholstery Contour Hr Dbr Artc Surf	61-0785-01	5

Figure 4-19. Multi-Function Foot Switch
Part No. 61-0969-01 (Gray)

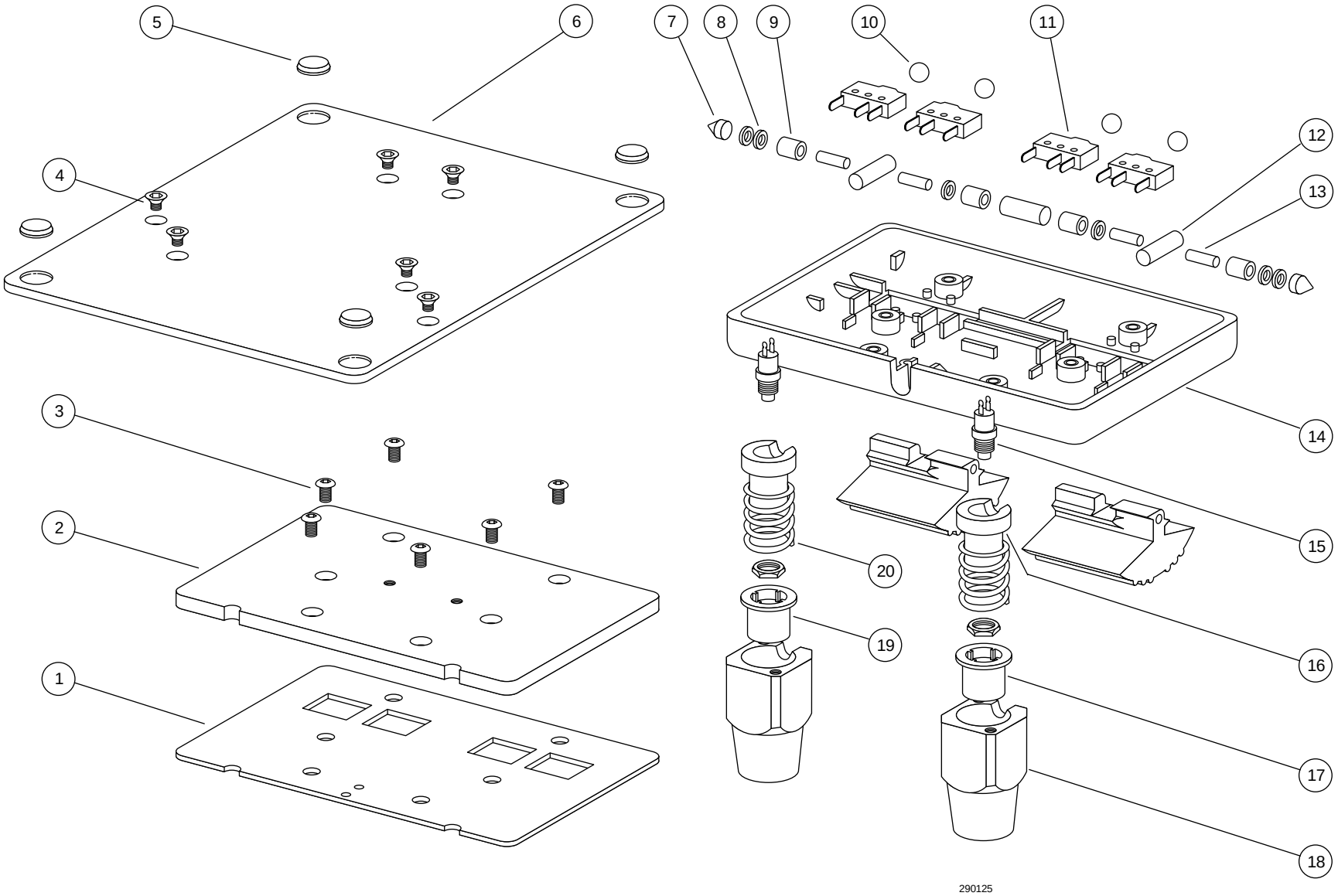


Table 4-16. Multi-Function Foot Switch Parts List

Ref. No.	Description	Part No.	Code
1	Strip, Spacer, Foot Switch	61-0804-00	5
2	Base, Foot Switch	61-0803-00	5
3	Screw, Pan Hd Phil, 6-32 X 3/8, Zinc	002-015-00	1
4	Screw, Fl Hd Phil, 6-32 X 3/8, Zinc	001-022-00	1
	Replaced by:		
	Screw, Flat Head, Self-Tap, Phil, 6-32 X 3/8 on S/N A4-0160 and later	003-097-00	1
5	Bumper, Pad, Rubber, 1/2 Dia, Gray	017-007-00	3
6	Base Plate, Foot Sw Multi-Fctn Gray	61-0971-01	5
7	Spacer, Tapered, Foot Switch	61-0335-00	4
8	Washer, Flat, Fiber, .128 ID	004-010-00	4
9	Spacer, Plain, Foot Switch	61-0336-00	4
10	Ball, .250 Dia, Stainless Steel	015-015-00	4
11	Switch, Miniature, 10A, 125/250 VAC	041-119-00	3
12	Spring, Elastic, 11/16, Foot Switch	61-0337-00	4
13	Pin, Dowel, .125 Dia x .50 Long, SS	011-052-00	4
14	Body, Foot Switch, Cndct, New/Gray	61-0802-01	4
15	Switch, Push Button, SPST 5A 115 VAC	041-059-00	3
16	Standoff, Button, Foot Switch	61-0975-00	4
17	Button, Foot Switch, Red	61-0974-00	3
18	Housing, Button, Foot Switch, Gray	61-0972-01	5
19	Button, Foot Switch, Green	61-0974-01	3
20	Spring Helical Cprsn .720 OD X 1.25	013-067-00	4
	Not Shown		
	Cable Assy, Foot Sw Multi-Function, Gray	61-0976-01	3

Figure 4-20. 8-Function Foot Switch
Part No. 61-2027-00

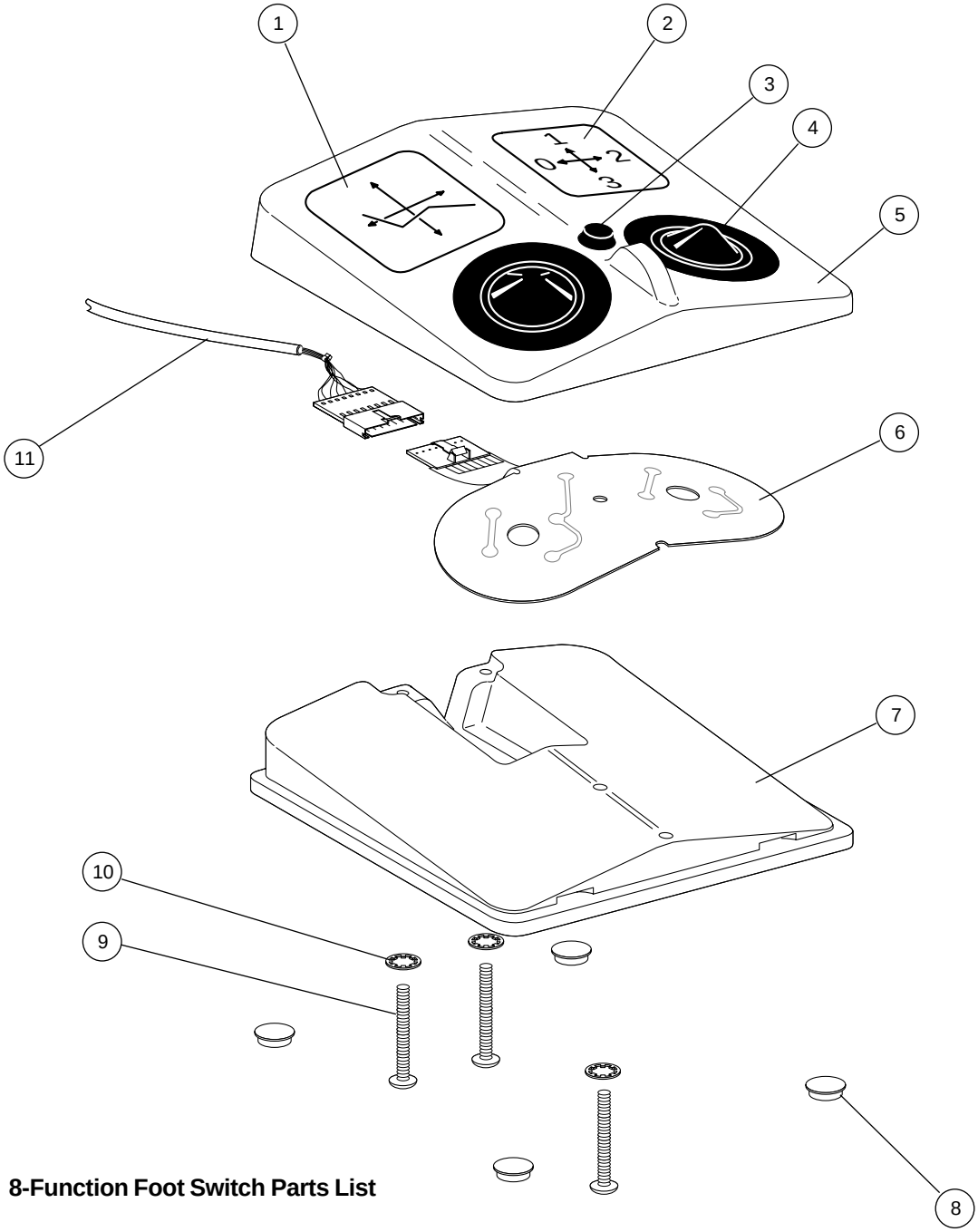


Table 4-17. 8-Function Foot Switch Parts List

Ref. No.	Description	Part No.	Code
1	Label, Footswitch, 8 Function, L.H.	051-163-00	5
2	Label, Footswitch, 8 Function, R.H.	051-164-00	5
3	Actuator, Program Footswitch, 8 Function	61-2043-00	5
4	Actuator Assy, Footswitch 8-Function	61-2042-00	5
5	Cover Assy, Foot Switch, 8-Function, Surf 6	61-2047-00	5
6	Membrane Switch, Foot Switch, 8 Function Service Kit	61-2189-00	5
7	Base, Footswitch, 8-Function	61-2040-00	5
8	Bumper, Pad, Rubber, 1/2 Dia, Gray	017-007-00	5
9	Screw, Pan Hd Phil, 6-32 X 7/8, Zinc	002-032-00	1
10	Washer, Lock, Int Tooth #6, Zinc Plated	004-073-01	1
11	Cable Assy, Foot Switch, 8 Function, Surf 6	61-2108-00	5

APPENDIX A

SPECIFICATIONS

Voltage: 100, 120 VAC or 240 VAC

Amperage: 8.5 Amp (100/120 VAC)
(max load) 4.25 Amp (240 VAC)

Est. Weight:

1010	270 lbs (136 kg)
1015/20	270 lbs (136 kg)

Hydraulic Fluid: 30 oz. (Dry fill.)
(Order A-dec P/N 61-0197-00,
one 16 oz. bottle.)

Dimensions

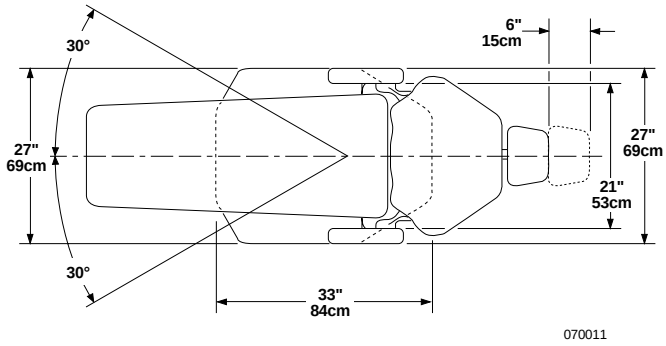


Figure A-1. 1010/15/20 Chair Footprint Dimensions

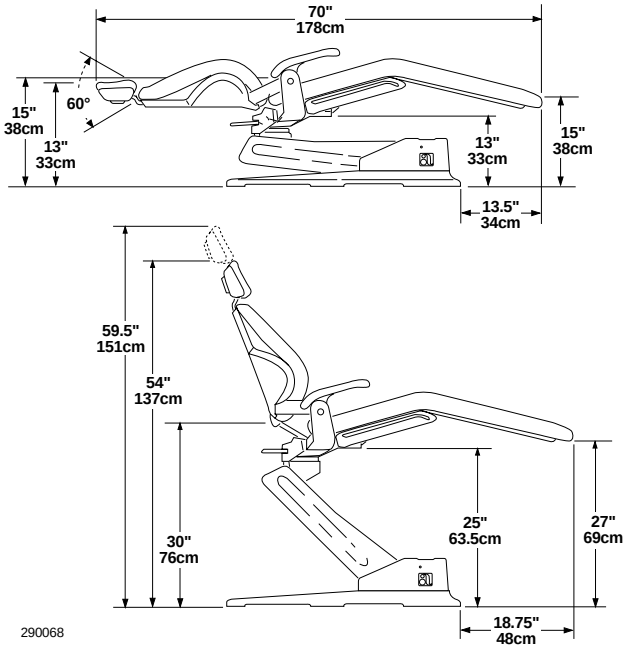


Figure A-2. 1010 Chair Vertical Dimensions

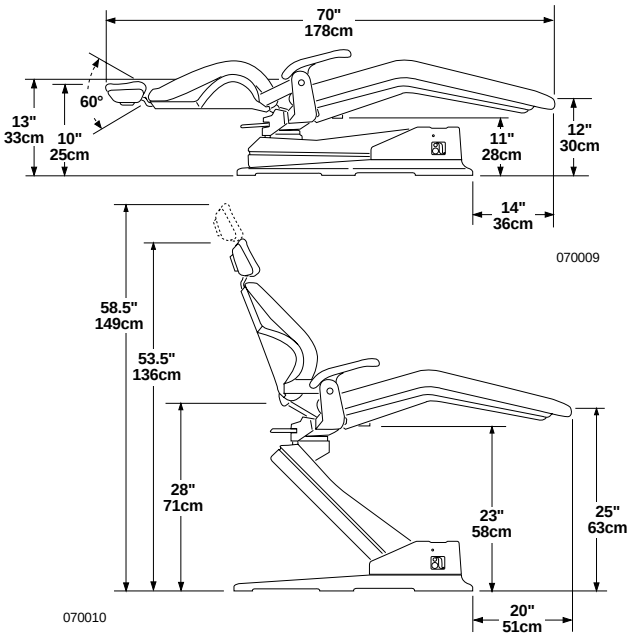


Figure A-3. 1015/20 Chair Vertical Dimensions

Eliminating Hydraulic Cylinder Noise

In most cases it will not be necessary to replace the cylinder to solve a noise problem. Order A-dec P/N 61-0839-00, an hydraulic oil additive. The additive eliminates any low-pitched groaning caused by the piston seal.

In rare cases, the noisy cylinder will emit a high-pitched squeak caused by the cylinder rod wiper being dry. The squeak can be eliminated by applying a light coating of a lubricant, such as A-dec silicone lubricant, (P/N 98-0090-00) to the cylinder rod.

If the cylinder continues to squeak after it's been lubricated, or groans even with the additive installed, order a replacement cylinder.

Improved Headrest Glidebar Tension Wedge

Wear in the headrest glidebar tension mechanism may reduce or eliminate the tension adjustment range. Order A-dec P/N 61-1303-00 (a new sliding wedge assembly). The new wedge assembly has a Nylatron® wear pad, linear expander spring, and urethane back-up pad to provide a greater adjustment range and improved holding capability. The new wedge replaces the existing wedge in the headrest glidebar tension mechanism. Installation instructions are included with the new wedge assembly.

Improving Lumbar Support

If necessary, the position of back lumbar support can be modified by increasing the height of the toeboard wear pads. A retro-fit wear-pad spacer kit is available which elevates the end of the toeboard by an additional 2-1/2”. Order A-dec P/N F84-712.

All 1010, 1015, and 1020 chairs manufactured after chair S/N G069170 include the new wear pads.

APPENDIX B

Replacing a Printed Circuit Board

Due to changes to the 1010/15 printed circuit board (PCB), there are new part numbers for the PCB, PCB cover, and the PCB store button extension assembly. The most noticeable change to the PCB is that a new PCB has one or two fuse holders mounted perpendicular to the board, the older PCB has a single fuse holder mounted flat on the board. These new parts are shipped as a kit, they are not interchangeable with the older parts. The old and new part numbers and the chair serial numbers that the change took place on are as follows:

Description	Old P/N	New P/N	S/N Changeover
Circuit Board Assembly, 100V	61-1373-00	61-1373-01	A1XXXXX
Circuit Board Assembly, 120V	61-1214-00	61-1214-01	J078003
Circuit Board Assembly, 240V	61-1217-00	61-1217-01	H073332
PCB Cover Assembly	61-1386-00	61-1515-00*	B193179
Store Button Extension Assembly	61-1389-00	61-1530-00*	

* Included with the appropriate PCB.

Replacing an old-style circuit board:

If you are replacing a circuit board on a chair having a serial number prior to those listed above, order a new PCB and a PCB conversion kit (A-dec Kit No. L37-365). The in-line fuse (120V chairs only) can be left in the solenoid wiring harness when replacing an old-style circuit board.

Replacing a cover or store button extension assembly:

The old-style cover (A-dec P/N 61-1386-00) assembly and store button extension assembly (A-dec P/N 61-1389-00) are available for field replacement should they become lost or damaged.

Replacing all four solenoids:

If you are replacing all four (4) solenoids on a 120V chair, specify that the solenoid set is for a 120V chair to ensure a solenoid fuse is included in the wiring harness. This applies only to a 120V chairs prior to S/N J078003.

Replacing only one solenoid:

When replacing only one solenoid, order the appropriate kit listed below:

Voltage	P/N
100V	L37-386
120V	L37-387
240V	L37-388

Yellowing 1015 Chair Armrests

Surf-colored 1015 chair armrests have, in the past, shown a tendency to yellow when exposed to ultraviolet light and certain alcohol-based disinfectants. To eliminate the problem, A-dec has been molding the armrests with a protective barrier-coated material since mid-January, 1990.

The barrier coating first used on the armrests shipped between mid-January, 1990 and mid-May, 1990 protected well against UV rays, but did not resist alcohol-based chemical disinfectants. As a result, this barrier coating was being wiped off with certain alcohol-based disinfectants. The currently used coating gives excellent UV stability as well as offering superior resistance to disinfectants. To replace yellowed armrests, order A-dec P/N 61-1404-00.

Improved Clamping on Double Articulating Headrest

The headrest locking capability has been improved by changing the handle and nut insert from 1/2-13 threads to 1/2-10 threads. The improved clamping will allow the headrest to carry a higher load. As a result of these changes, the handle will be slightly harder to turn (requires about 20% more effort). The new handles do not look any different.

When a new handle, A-dec P/N 61-1553-00, (replaces A-dec P/N 61-0825-00) is ordered, the mating locking nut (A-dec P/N 61-1551-00) will be included.

Eliminating Hydraulic System "Buzz"

Beginning in June,1990, 1010/15/20 chairs include a larger-diameter pickup tube in the hydraulic fluid reservoir. A larger pickup tube increases the flow of hydraulic fluid to the pump and eliminates the tendency of the hydraulic system, when the fluid is cold, to emit a momentary “buzzing” noise (caused by the hydraulic pump cavitating).

If a chair emits a momentary buzzing noise when cold, check for the type of reservoir tank (located under the motor/pump cover). If the tank is plastic, and the chair was shipped prior to June 1990 (check the serial number tag), replace the old pickup tube with a new pickup tube (A-dec P/N 61-1489-00). If the chair has a metal reservoir tank, install a new plastic reservoir tank (A-dec P/N 61-1339-00) and new pick-up tube assembly (A-dec P/N 61-1488-00).

Improved Headrest Knob

A number of early 1010/15 chairs were shipped without lubricant on the threads of the headrest knob, resulting in the knob being difficult to tighten. If you have a headrest that is difficult to tighten, remove the knob from the headrest and lubricate the threads with a small amount of synthetic grease such as A-dec Silicone Lubricant.

CAUTION

DO NOT USE PETROLEUM-BASED LUBRICANT (such as Lubriplate, Vaseline, 3-in-1 Oil, Handpiece Lubricant, etc.) ON THE HEADREST KNOB.

Additionally, the shape of the headrest knob has been changed to a scalloped design which provides the operator with a better grip. The new knob began shipping with chair S/N J077784 in early October of 1990. The knob will retro-fit to all earlier 1010/15 headrests. To replace a smooth knob with a scalloped knob, order A-dec P/N 61-1232-00.

When installing the new knob, remember to lubricate the threads with a small amount of synthetic grease.

1015 Vac Back Umbilical Changes

A PVC sleeve is being used to cover 1015 Vac Back chair umbilical tubing in place of the braided sleeving previously used. The PVC sleeve is water-tight for easier cleaning, and surf-colored to improve appearance. To replace an umbilical with braided sleeving, order A-dec part numbers:

61-1550-00	Umbilical Assembly
40-0145-00	Adapter, Tubing 5/8 to 1/2
024-037-00	Tubing, Convolute, Gray 5/8 ID

To install a new umbilical on a 1015 Vac Back chair, complete the following instructions:

1. At the connection to the manifold on the chair back, install a short length of convolute tubing and an adapter tube. Use 3M® plastic adhesive #4693, or equivalent, to seal the parts in place.
2. Connect the end of the new umbilical vacuum tubing to the adapter tube. Use 3M plastic adhesive #4693, or equivalent, to seal the parts in place.
3. At the connection to the canister, remove the old convolute vacuum tubing and install the new umbilical vacuum tubing to the canister.
4. Connect the syringe tubing. Be sure to connect ribbed tubing to ribbed tubing.

In addition, the vacuum tube inside the umbilical has been reduced from 5/8 ID to 1/2 ID to standardize Vac Back tubing between the 1005 and 1015 chairs.

Installing a Second Footswitch

To add a second footswitch to a 1010/15/20 chair, order A-dec Part No. 61-1029-00. The kit includes a standard gray multi-function footswitch, the required adapter cable, hardware, and instructions needed for the installation.

New Store Button Actuator

Previously the store button has been actuated by inserting a probe through a hole in the motor/pump cover. Effective with chair S/N L086602, a rubber button is included in the motor/pump cover eliminating the need for a probe.

Mechanical Stop Added to Chair Back

A stop bracket has been added to the chair back limit switch assembly to eliminate the following problem:

The chair back may be physically forced forward damaging the limit switch assembly. Although it is unlikely this would happen to an installed chair, however, damage to the switch assembly may occur during shipment or installation. To replace a damaged limit switch assembly, order A-dec Kit No. L37-389. The kit includes a new limit switch, mounting bracket, the stop bracket and instructions. All 1010 and 1015 chairs, serial number C194177 through C197582 include the stop bracket. All 1010 and 1015 chairs manufactured after C197582 have the stop incorporated into the chair upper structure casting.

Controller Software Change

A software change to the chair controller was made in November, 1990 to eliminate the following problem:

When Back Up switch was pressed, then Base Up switch was pressed, then Back Up released, etc., in rapid succession, and, if the back was close to the up-limit of travel, the back may travel past the limit switch damaging the Back Up limit switch, limit switch bracket, or potentiometer assembly. This was caused by hydraulic pressure in the lift cylinder preventing the Back Up manifold valve from closing for several seconds.

The new controller software shuts the motor off momentarily when Back Up is released, allowing hydraulic pressure in the system to drop and the manifold valve to close. While there was some potential for minor damage to a chair (not every chair has this problem), note that there is no hazard of injury to the patient or to the operator due to this problem.

Improved Chair Headrest Positioning

Effective August 1, 1991 the headrest pivot position on the 1010 and 1015 chair glidebar (P/N 61-1509-00) has been modified to increase the angle that the headrest can be tipped back. This modification will set the cushion approximately 3/8" back from its previous position. Additionally, the modification allows the headrest to be positioned approximately 1/8" lower than was previously possible.

IC Cuspidor Safety Switch

Effective July 28, 1991, the cuspidor safety switch for a 1010/15 mounted IC Cuspidor is standard. The function of the safety switch is to shut off the chair if the cuspidor is lowered onto an object.

For ease of installation, the cuspidor end of the safety switch cable plugs into a connector labeled CUSP on PCBs shipped after the above date. For 1010/15 chairs having an older PCB without the cuspidor connector, an adapter cable is shipped with each cuspidor. Complete instructions are included with the kit.

Thicker Upholstery

Effective November 1, 1991, a thicker set of upholstery with added lumbar support will be standard for 1010/15/20 chairs. The original upholstery was made using 2" thick foam, the new upholstery is made from foam 2 3/4" thick.

The new upholstery set provides a softer cushion.

New Upholstery Material

A-dec has begun using two lines of vinyl upholstery material from a new supplier.

One line “Duration” replaces the Naugahyde “Neochrome” and has the added advantage of an antimicrobial ingredient. The other new line “Hampton” replaces the Naugahyde “Caressa.”

Color choices have changed slightly, contact your A-dec authorized dealer for more information.

1010/15/20 Vac Back

As the backrest of the 1010/15/20 Vac Back Chair moves from upright to supine, the assistant's instrument holder does not remain perfectly horizontal (6° variation maximum). With the back up, the holder bar will be horizontal. As the back is lowered, the bar will “tilt” a bit, then as the back goes further down, the holder will return to a nearly horizontal position.

The interim “tilt” is minimal and may not be noticed by most users and does not effect the performance of the Vac Back unit. However, if the holder bar is not horizontal when the chair back is placed in the preferred operating position, an adjustment can be made.

Place the chair in the preferred operating position, then raise or lower the instrument holder bar until it is in the desired position. A slip joint at the base of the holder bar arm allows this adjustment although it will take a little effort to overcome the resistance in the joint.

Once the new position has been established, the arm will always be horizontal when the chair back is in the preferred operating position.

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